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Supplement to the Myriapoda of the Philippine Islands

By Yu-hsi Moltze Wang, Division of Biology,
University of Utah

The following notes are based upon a collection of Myriapods sent to me for study through the kindness of Dr. Willis J. Gerstch. The specimens with which this paper is concerned were collected by Mr. Borys Malkin and deposited at the American Museum of Natural History, New York. To both of these men I am grateful.

Class Chilopoda

Order Geophilida

Mecistocephalus rubriceps Wood 1863

1 female 42 mm. in length, taken at Baquio, Mountain Province, Luzon, El. 4200–4400, Nov. 3, 1945. The coxae of the anal legs have pores variable in size, the larger ones being about 20 in number, the smaller ones numerous.

Order Scolopendrida

Cryptops melanotypus Chamberlin 1941

1 female 15 mm. in length, taken at Mt. Maquiling, Laguna Province, Luzon, El. 1200, Nov. 25, 1945.

Cryptops brunneus Chamberlin 1921

1 female 19 mm. in length, taken at Mt. Maquiling, Laguna Province, Luzon, El. 1500, Dec. 30, 1945. In the key for dis-

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tinguishing these two species given in The Myriapoda of the Philippine Islands (Serica, vol. 1, p. 48), there was a misprinting in the key of couples 4a and 4c, which should be corrected to read as follows:

> "4a. . . . the third tergite having the spiracles large and longitudinally ellipic .... *Cryptops brunneus.*
> 4c. . . . the third tergite having the spiracles as usual ......
> .... *Cryptops melanotypus.*"

Otostigmus astenus Kohlrausch 1881

1 female 45 mm. in length, taken at Mt. Maquiling, Laguna Province, Luzon, El. 600–1200, Oct. 1945. 1 female 36 mm. in length, taken at Baguilo, Mountain Province, Luzone, El. 4200–4400, Nov. 3, 1945.

Rhysida nuda brevicornuta Wang 1950

1 female 22 mm. in length, taken at Alabang, Rizal Province, Luzon, Dec. 1945. It was formerly found at Mindanau. The name of this species is misprinted on pages 42 and 55 respectively in Serica, vol. 1, as *R. N. brevicornis.*

Scolopendra subspinipes subspinipes Leach 1815

1 female 30 mm. taken at Mt. Maquiling, Paguna Province, Luzon, El. 1100–1400, Sept. 29, 1945.

Scolopendra morsitans L. 1758

1 male 50 mm. in length, taken at Ft. W. McKinley, Jan. 10, 1946, 1 female 62 mm. in length, taken at Alabang, Sept. 1945, 2 females 55 and 65 mm. in length, taken at Alabang, July 1945, all at Rizal Province, Luzon.

Order Scutigerida

Parascutigera philippina Chamberlin 1921

1 male 9 mm. in length, taken at Los Banos, Laguna Province, Luzon, July 1945.

Class Diplopoda

Order Polydesmida

Chondromorpha xanthotrica (Attems) 1898

1 male 1.5 mm. in breadth, taken at San Fernando, Lu Uni Province, Luzon, Nov. 2, 1945. 1 female 2.1 mm. in breadth, taken at Alabang, Rizal Province, Luzon, Jan. 1946. This is the new record in distribution since the Genus *Chrondromorpha* is mainly distributed in India; only one species has been recorded from Upolu, New Caledonia. This species was formerly recorded from Ceylon, Kandy.

Pratinus quatuor-puteus (Wang) 1950

1 male 38 mm. in length, 3.5 mm. in breadth; 1 female 31 mm. in length, 3 mm. in breadth, taken at Mt. Maquiling, Laguna Province, Luzon, El. 1100–1400, Sept. 29, 1945. This genus was first designated as *Prionopeltis* Pocock 1895 but was changed to *Pratinus* by Attems in 1937, because the former name is preoccupied by a trilobite *Prionopeltis,* Hawle and Corda 1847. Accordingly, *montanus* Chamberlin and *infulatus* Wang are thus to be placed under the new name.

Pratinus montanus (Chamberlin) 1921

5 females, 1 male 27–45 mm. in length, 2.5–4 mm. in breadth taken at Mt. Maquiling, Laguna Province, Luzon, El. 600–3200, Oct., Nov., Dec. 1945; 1 female 41 mm. in length taken at Mariveles Res., Zambales Mts., Zambales Province, Luzon, El. 700–1000, Nov. 27, 1945.

Strongylosoma philippina Chamberlin 1921

1 male taken at Mt. Maquiling, Laguna Province, Luzon, El. 1100–1400, Sept. 29, 1945.

Platyrhacus margaritiferus Gervais 1847

1 male, 1 female taken at Mt. Maquiling, Laguna Province, Luzon, El. 1100–1500, Sept. 29, 1945, Jan. 13, 1946.

Platyrhacus dorsalis Peters 1864

1 female from the Philippines in the University of Utah Collection.

Order Spirobolida

Trigoniulus laminifer docens Wang 1950

1 male, taken at Mt. Maquiling, Laguna Province, Luzon, El. 1500–3200, Nov. 21, 1945.

Spirostrophus socius socius Chamberlin 1921

1 female each taken at Mt. Maquiling, Laguna Province, Luzon, El. 800–3000, Nov. 18, 1945, and at Dolores, Tayabas Province, Luzon, El. 1200, Nov. 13, 1945.

Spirostrophus socius mindanaunus Wang 1950

1 male taken at Mt. Maquiling, Laguna Province, Luzon, El. 600–1200, Oct. 13, 1945.

Spirostrophus socius sumarinus Wang 1950

2 females taken at Los Banos, Laguna Province, Luzon, Oct. 30, 1945.

Improved Technique for Rearing Chigger Mites[1, 2] (Acarina: Trombiculidae)

By Louis J. Lipovsky

A culture tube and a dish for rearing chiggers have been used successfully for the past four years. The tube and dish are used without any material other than a mixture of charcoal and plaster of Paris which line the tube and dish. The tube is used primarily for engorged larvae held for transformation into nymphs; however, rearing may be continued through the adult stage using the 3- or 5-dram vial described below. The culture dish is especially useful and convenient for observations and ease of manipulation of the post-larval stages.

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[1] The studies upon which this paper is based were conducted under contract, N6 ori 220 Task Order II, between the University of Kansas and the Office of Naval Research.

[2] Contribution number 792 from the Department of Entomology, University of Kansas.

The culture tube is a modification of the tube described by Farrell and Wharton (1948, Jour. Parasit. 34: 71) for shipping larval trombiculids; however, it is made with a 3- or 5-dram, Kimble "Opticlear," plastic-stoppered vial instead of a cork-stoppered shell vial. This plastic-stoppered vial is suitable for shipping all stages of chiggers as well as the collembolans which are cultured as food for the nymphs and adults (Lipovsky, 1951, Jour. Parasit. 37: 324–326).

The vial, 3- or 5-dram, is lined completely with a charcoal and plaster of Paris mixture. This mixture is prepared as follows: mix 600 c.c. of dry, slow-setting (common) plaster of Paris with 50 c.c. of powdered charcoal; blend thoroughly by shaking in a capped jar. This amount of plaster mixture will be sufficient for many vials. The same mixture is used to make the culture dish.

Seven cubic centimeters (slightly compacted) of this dry mixture is placed in the 3-dram vial and to this 3 c.c. of water are added and mixed until plastic but not fluid; if it flows add a little more dry mixture. Then the plastic stopper is placed tightly in the vial, and, holding the inverted vial between thumb and forefinger, the stoppered end is tapped sharply 6 to 8 times on a flat, solid, wooden surface. Turned upright again, the vial is tapped 3 to 4 times (relax hold on vial during moment of impact to avoid injury if vial should break).

At this point the top and sides of the vial should be lined with a thin, uniform coat and the bottom of the vial should contain about 15 mm. of wet plaster. After the plaster has set, the stopper is slowly removed. The plaster lined vial should have a thin seal at the opening of the tube, just beneath the bottom level of the plastic stopper. This seal is removed carefully and then discarded. For the admission of light within the tube, 4 or 5 longitudinal slits are made in the plaster on the sides of the tube. The culture tube is now ready for use.

Stoppered tubes will maintain a uniform humidity for many months and no water need be added when chiggers are first placed in the tubes. When these tubes are used for shipping, 3 or 4 pin holes should be made in the bottom portion of the stopper; and if the top of the cap is also solid, pin holes should be made here also to compensate for the changes in temperatures and pressures encountered during shipment. If a tube is opened frequently for observations, a few drops of water may be added as needed but care should be taken to avoid adding water in excess of that absorbed by the plaster.

The dish is a stender dish with an inside diameter of 65 mm. and 20 mm. in depth. It is lined inside with the same plaster mixture used in making the culture tube. The wet mixture is blended and shaped against the sides of the dish up to the top edge, then the bottom of the dish is tapped until the mixture forms a level bottom with a thin plaster lining on the sides. When set, the plaster should be smooth, free of pits and cavities. The upper 6 mm. of plaster lining should be removed to form a plaster-free zone. This plaster-free band must be kept clean and smooth to act as a barrier to the nymphs and adults.

Coating the outside of the dish and the entire lid with paraffin as well as covering the lid with waxed paped is recommended. As the paraffin solidifies on the lid, the dish and lid are fitted together tightly. The lid is then covered with a sheet of thin waxed paper by placing the waxed paper over the open dish, pressing the lid snugly to the dish, lifting the edges of the paper over the top of the lid and fusing it to the paraffin coating with a hot spatula. The inner central portion of the paper should remain free, leaving a space between the waxed paper and the lid.

Farrell and Wharton (1949, Jour. Parasit. 35: 435) recommend the use of vermiculite, a mica, as a "substrate" over a charcoal-plaster mixture. Hyland (1951, Ann. Ent. Soc. Amer. 44: 297–301) reported on the use of a small stender dish as a microculture dish, with the charcoal-plaster mixture covered with a thin layer of sterilized soil. The writer has found that two grooves cut into the plaster surface about 2 mm. in depth and 2 mm. wide, in the form of a cross, and centrally located, is all that is needed. These straight grooves provide a protective niche into which nymphal and adult chiggers may crawl, where they may transform and yet be visible under the microscope. In dishes which contain both collembolans and chiggers for periods of weeks or months, the grooves become filled with eggs, exuviae, and some debris under which chiggers may conceal themselves. These grooves, therefore, should be cleaned out periodically to avoid possible injury to specimens when trying to locate them.

This culture dish is ideal for individual rearing of chiggers or for as many as 50 adults of the same species. In the latter instance, food must be available at all times or they may eat their own eggs for they are cannibalistic. Their own eggs are frequently eaten even when other food is available.

In addition, this culture dish has been used successfully for rearing other small arthropods including mites of the families Oribatidae, Tyroglyphidae, Trombidiidae, Phytoseiidae, Macrochelidae, Anoetidae, Uropodidae, and Cheyletidae as well as insects of the families Cryptostemmatidae (Hemiptera), Staphylinidae and other coleopterous species, and Stratiomyiidae, Sciaridae, Mycetophylidae and other Diptera.

Catches of Euplexoptera and Elateridae in Light Traps in South Dakota

By H. C. Severin, South Dakota State College

Light traps have been operated in representative areas in South Dakota for many years and during this time much valuable information concerning insects has been accumulated. In this article, catches dealing only with Euplexoptera and Elateridae will be discussed.

The earwig, *Labia minor* (L.) is the only species of Euplexoptera that can be reported as occurring in South Dakota at the present time. This earwig is not common in South Dakota and strange to say we have been able to collect it only through light traps or from illuminated show windows of store buildings in southeastern South Dakota. Diligent search has been made for this species of earwig in what should have been very favorable environments, but we have not been able to collect a single specimen in such areas. However, by means of light traps, we have taken as many as fifteen specimens of this earwig in a single night. While specimens were taken from illuminated show windows of store buildings, it has not been possible for us to collect more than three of four earwigs from such windows in a single evening.

The light traps, through which we collected this species of earwig, were suspended by means of wires from cross arms attached to posts. The bottom of each trap was about seven feet from the surface of the soil. The environment in which the largest numbers of earwigs were collected was adjacent to a cattle feeding yard which contained quite a large accumulation of cow manure. Contrary to the conclusion of S. W. Frost,* we are forced to believe that at times, at least, *Labia minor* (L.) is attracted through light supplied by Mazda frosted lamps of 60, 100, or 200 watts or by fluorescent day-light tubes of 15 watts.

Twenty species of adult Elateridae were taken thus far in South Dakota in light traps.** The species collected are the following:

1. *Conoderus vespertinus* (Fab.)
2. *Conoderus auritus* (Hbst.)
3. *Drasterius dorsalis* (Say)
4. *Limonius ursinus* (VanDyke)
5. *Athous cucullatus* (Say)
6. *Hemicrepidius memnonius* (Hbst.)
7. *Glyphonyx recticollis* (Say)
8. *Ampedes obliquus* (Say)
9. *Ampedes areolatus* (Say)
10. *Megapenthes stigmosis* (Lec.)
11. *Melanotus decumanus* (Er.) = *M. canadensis* (Cond.) acc. to Dietrich.
12. *Melanotus ignobilis* (Melsh.)
13. *Melanotus communis* (Gyll.) Var. "A" of Dietrich
14. *Melanotus communis* (Gyll.) Var. "B" of Dietrich
15. *Melanotus divarcarinus* (Blatchley)
16. *Melanotus fissilis* (Say)

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* Frost, S. W. 1952. Unusual catches in light traps. Ent. News, 63: 151–152.

** Severin, H. C. 1949. The wireworms (Elateridae) of South Dakota. S. D. Agr. Exp. Sta. Tech. Bull. 8: 18.

17. *Melanotus infaustus* (Lec.)
18. *Melanotus cribulosus* (Lec.)
19. *Cardiophorus convexux* (Say)
20. *Horistonotus uhleri* (Horn)

Of the species listed, those numbered 1, 3, 6, 7, 11, 12, 13, 16, and 19 were taken in large numbers in the light traps. None of the traps were located under or in trees or under structures from which the beetles might have fallen by accident into the traps. Consequently, the conclusion must be drawn that most of the specimens taken were attracted to the traps by the light.

It should be stated that the number of specimens of a particular species of Elateridae that are taken in a light trap may depend upon many factors, only two of which will be mentioned. One of the most important factors is the effect of the ecological environment upon the abundance of the Elaterid. As an example of this *Hemicrepdius memnonius* (Hbst.) may be mentioned. In one of the traps located in a low area that was poorly drained and adjacent to a pond, it was not uncommon to take fifty to seventy-five specimens of this species every warm, rainless, calm night during the month of July.

Another important factor which may determine the number of specimens of a particular species of Elaterid that may be taken in a light trap is the time of year when the traps are run. We have taken specimens of Elateridae in traps from May through September, but in general, June, July, and August were the most favorable months, with July being the peak month.

An Acknowledgment

ENTOMOLOGICAL NEWS wishes to express its thanks and appreciation to the ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA for contributing a portion of the time of its Librarian, Mrs. Phillips, for compiling its "CURRENT ENTOMOLOGICAL LITERATURE." This generous action by the ACADEMY assures the continuance of a unique and valuable feature of the NEWS, one upon which many of its readers have come to depend for keeping abreast of current developments in entomology.

Earwigs at Light

The infrequency of observations and scarcity of records on the 15 or so species of Dermaptera in the United States have suggested that these insects are not attracted by light. Although a few collectors have taken earwigs at light,* as evidenced by collection labels and literature notes, I submit the following cases where earwigs have definitely been attracted to light or were scavenging under lights.

Doru lineare (Escholtz) has been most commonly recorded at light. Both sexes of this earwig regularly flew in to 3 Coleman lanterns set up before a sheet in many localities in Arizona and Texas, from May through September, 1948. During the same season in Mexico, from the state of Nuevo Leon south to Vera Cruz, Puebla, and Guerrero, they often came to the lights by the hundreds.

Spongovostox apicedentatus (Caudell). Both sexes were taken at lights in Sabino Canyon, Santa Catalina Mts., Arizona, July, 1948.

Labia minor (L). In Lexington, Mass., June, 1952, one female was caught in erratic, spiraling flight around an indoor light, similar to that shown by many moths and beetles.

Labidura riparia (Pallas). One female was observed running about, probably scavenging, on a broad, well-lighted expanse of concrete in Dayton, Texas, September, 1949.

Forficula auricularia (L). Dr. K. A. Christiansen took several nymphs and one female in a light trap at Palouse, Washington, June, 1950.

The last two records are probably cases of scavenging at light, although the others indicate that certain species of earwigs are definitely attracted by light. Since many winged males of such photophobic insects as roaches are well known to be attracted to light, it does not seem surprising that earwigs might also be so attracted.

—W. L. Nutting, Biological Laboratories, Harvard University.

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* Frost, S. W. 1952. Unusual catches in light traps. Ent. News, 63: 151–152.

Current Entomological Literature

Compiled by **VENIA T. PHILLIPS**, Librarian

Academy of Natural Sciences of Philadelphia

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania pertaining to entomology, including all arthropods except Crustacea. Coverage will be world-wide as regards major contributions to systematics as well as for all papers on morphology, physiology, embryology, etc. In addition, for species from the Americas and the Pacific (Nearctic, Neotropical and Polynesian regions) all minor contributions to taxonomy, distribution, etc., will also be recorded.

This list gives references of the year 1952 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

GENERAL—Anon.—Henry Jerome Turner (1856–1950). [144] 1951–52: xiii. (Obit., port.) **Bernard, F.**—(See Hymenoptera.) **Boschma, H.**—Alida Margaretha Buitendijk. [57] 13, no. 306: 177–178, 1950. (Obit., bibl.) **Coiffait, H.**—Quelques données actuelles sur l'écologie et l'éthologie des arthropodes cavernicoles terrestres et endogés. [135] 86: 125–130. **Coquillat, M.**—Anthelme-Jean Bange, 1896–1950. [140] 19: 213–214, 1950. (Obit., port.) **Davies, D. E.**—(See Orthoptera.) **Davies, D. M.**—(See Diptera.) **DeCoursey, J. D. & A. P. Webster.**—Inhibition of growth of a mold quantitated to demonstrate the effect in insect specimen boxes. [101] 60: 183–188. **Delamare-Deboutteville, C.**—(See Smaller Orders.) **Docters van Leeuwen, W. M.**—In memoriam Karel Willem Dammerman. [57] 14, no. 319: 1–2. **Eyndhoven, G. L. van.**—In memoriam Dr. Donald MacGillavry, 21.V.1869–13.I.1951. [149] 95: 1–7, ports. **Eyndhoven, G. L. van.**—In memoriam Prof. Dr. Ivar Tragardh 16–IX–1878–22–V–1951. [57] 13, no. 315: 335–336, 1951. **Havelka, J.**—Osobni-Personalia. RNDr. Karel Pfleger. [45] 48: 141–142, 1951. (Obit., portr.) **Hayrovsky, L.—Osobni. Frantisek Sterba.** [45] 48: 263, 1951. (Obit., bibl.) **Hemming, F.**—International code of zoological nomenclature; proposed amplification clarifications and extensions to be considered by the International Congress of Zoology, Copenhagen, 1953. (Notice.) [52] 45: 499–500. **Hemming, F.**—International code of zoological nomenclature; proposed amplification clarifications and extensions to be considered by the Int. Congr. Zoology, Copenhagen, 1953. [57] 14, no. 323: 78–79. **Hulls, L. G.**—Entomology during the early years of the Royal Society, as revealed by the Philosophical Transactions. [144] 1951–52: 84–90. **Husbands, Richard C.**—Some techniques used in the study of Aedes eggs in irrigated pastures in California (Culicidae). [92] 12: 145–150, ill. **John, H.**—Eine methode zur trockenpräparation von raupen. [28] 2: 315–317. **Jones, J. C. & J. L. Schelteme.**—(See Diptera.) **Leefmans, S.**—Dr. Leland O. Howard (1857–1950). [57] 13, no. 308: 209–210, 1951. (Obit.) **Leefmans, S.**—In memoriam R. A. Polak. [57] 14, no. 322: 49–50. **Lempke, B. J.**—In memoriam Cornelis Doets, 10 Sept. 1893–15 June 1952. [57] 14, no. 326: 113–115. (Port., bibl.) **Lempke, B. J.**—In memoriam Johannes Bastiaan Corporaal. [57] 14, no. 325: 97–98. (Port.) **McLintock, J.**—Continuous laboratory rearing of Culiseta inornata (Will.) (Culicidae). [92] 12: 195–201. **Maessen, Th.**—How I kept my butterfly collection in tropical West-Africa. [57] 13, no. 318: 379–380, 1951. **Maltais, J. B.**—(See Hemiptera.) **Narayanan, E. S. & T. V. Venkatraman.**—(See Hymenoptera.) **Osborn, H.**—A brief history of entomology including time of Demosthenes and Aristotle to modern times with over five hundred portraits. Pp. iv + 303, Columbus, Ohio, Spahr & Glenn, $4.50. (Rev. by H. B. Weiss in [101] 60: 178.) **Osborn, H.**—In memoriam, Clarence Hamilton Kennedy, 1879–1952. [52] 45: 361–363. (Port.) **Popham, E. J.**—Observations on the behaviour of aquatic insects during the drying up of a small moorland pond. [60] 88: 180–181. **Robinson, A. G.**—(See Arachnida.) **Robinson, H. S.**—The optimum conditions for the occurrences and observation of rare insects. [144] 1951–52: 118–125. **Roepke, W.**—In memoriam Dr. J. C. Koningsberger. [57] 13, no. 311: 257–258, 1951. **Roepke, W.**—In memoriam (Heer Hendrik Lucht). [57] 13, no. 312: 286, 1951. **Roepke, W.**—In memoriam Professor Dr. L. J. Toxopeus. [57] 13, no. 313: 289, 1951. **Roepke, W.**—Professor Dr. L. J. Toxopeus ter nagedachtenis. [149] 95: 9–22. (Port., bibl.) **Shambaugh, G. F.**—Microinjection technique in mosquitoes (Culicidae). [92] 12: 216, ill. **Simmonds, F. J.**—Parasites of the frit-fly, Oscinella frit (L.) in eastern North America. [40] 43: 503–542, ill. (*). **Slaby, O.**—Concerning the dependence of the Lepidoptera fauna of Bohemia on climatic cycles (in Bohemian, with Eng. summary). [45] 48: 242–

253, 1951. **Smith, R. W.**—Another method of rearing grasshoppers in the laboratory. [43] 84: 269–271, ill. **Starcke, A.**—J. A. F. Lodeizen. [57] 13, no. 309: 225–226, 1951. (Obit.) **Vago, C.**—Le role des microbes de l'intérieur des oeufs d'insectes en vue de l'emploi de ces derniers comme milieux vivants. [135] 86: 252–258. **Weber, N. A.**—The 1952 animal behavior eclipse expedition of the College of arts and science. [Baghdad Coll. art. & sci. Publication] 2, 23 p. **Wiel, P. van der.**—In memoriam Dr. D. MacGillavry. [57] 13, no. 310: 241–243, 1951. **Wiel, P. van der.**—In memoriam Horace St. John K. Donisthorpe. [57] 13, no. 314: 317, 1951.

ANATOMY, PHYSIOLOGY, MEDICAL—**Ash, J.**—(See Small Orders.) **Beck, E. C.**—(See Diptera.) **Bertrand, H.**—(See Coleoptera.) **Bonnemaison, L.**—(See Hemiptera.) **Bounhiol, J.-J.**—(See Lepidoptera.) **Braesch, S.**—(See Orthoptera.) **British Association**, Zoology, Belfast Meeting.—Behaviour of social insects (Symposium). [98] 170: 642–644. **Buchner, P.**—Historische probleme der endosymbiose dei insekten. [149] 95: 143–165. **Buck, J. B., M. L. Keister & I. Posner.**—Physiological effects of DDT on Phormia larvae (Diptera: Metopiidae). [52] 45: 369–384, ill. **Buddenbrock, W. v. & I. Moller-Racke.**—Beitrag zum lichtsinn der fliege Eristalomyia tenax (Dipt.). [159] 149: 51–61, ill. **Carayon, J.**—Les mécanismes de transmission héréditaire des endosymbiontes chez les insectes. [149] 85: 111–142, ill. **Cashman, E. R.**—(See Coleoptera.) **Chorabik, S.**—Anatomy and histology of the digestive canal in the weevil Strophosomus capitatus Deg. (Curculionidae). (In Polish, with English summary.) [114] 21: 1–29, ill. 1951. **Coiffait, H.**—(See Coleoptera.) **Colyer, C. N.**—(See Diptera.) **Dixon, S. E.**—(See Diptera.) **Doutt, R. L.**—(See Hymenoptera.) **Eisner, T. & E. O. Wilson.**—(See Hymenoptera.) **Evans, F. C. & F. E. Smith.**—(See Small Orders.) **Forbes, J.**—(See Hymenoptera.) **Fraenkel, G.**—A function of the salivary glands of the larvae of Drosophila and other flies. [30] 103: 285–286. **Fraenkel, G.**—The role of the symbionts as sources of vitamins and growth factors for their insect hosts. [149] 95: 183–196. **Fukuda, S.**—The production of the diapause eggs by transplanting the suboesophageal ganglion in the silkworm. [Proc. Japan Acad.] 27: 672–677, ill. **Gardner, A. E.**—(See Smaller Orders.) **Gaul, A. T.**—Audio mimicry: an adjunct to color mimicry. [115] 59: 83–84. **Goss, R. J.**—(See Smaller

Orders.) **Grassé, P. P.**—Rôle des flagellés symbiotiques chez les blattes et les termites. [149] 95: 70–80. **Grosch, D. S.**—(See Hymenoptera.) **Gunn, D. L. & P. Hunter-Jones.**—(See Orthoptera.) **Hall, Irvin M.**—(See Lepidoptera.) **Hasegawa, K.**—(See Lepidoptera.) **Haufe, W. O.**—(See Diptera.) **Hollande, A.**—L'évolution des flagellés symbiotiques, hôtes du Cryptocercus et des termites inférieurs. [149] 95: 81–110, ill. **Horsfall, W. R. & A. P. Morris.**—(See Diptera.) **Howden, H. F. & P. O. Ritcher.**—(See Coleoptera.) **Howe, R. W.**—(See Coleoptera.) **Hussey, R. F.**—(See Hemiptera.) **James, H. G.**—(See Diptera.) **Kalmus, H. & C. R. Ribbands.**—(See Hymenoptera.) **Kettle, D. S. & J. W. H. Lawson.**—(See Diptera.) **Koch, A.**—Neuere ergebnisse auf dem gebiete der experimentellen symbioseforschung. [149] 95: 166–182. **Kudla, M.**—(See Lepidoptera.) **Lawrence, R. F.**—(See Arachnida.) **Lawson, F. A.**—(See Orthoptera.) **MacBain, J. W.**—A survey of investigations on the diseases of insects. [54] 82: 7–14. **MacNeill, N.**—(See Smaller Orders.) **Moklowska-Hellerowa, A.**—Multivoltinism in Celerio euphoribae L. (Lepid.) (In Polish with English summary.) [114] 21: 147–161, 1951. **Nijenhuis, E. D. & D. Dresden.**—A micromorphological study on the sensory supply of the mesothoracic leg of the American cockroach, Periplaneta americana. [Proc. K. Ned. Akad. Weten.] ser C, 55: 300–310, ill. **Nijveldt, W.**—(See Diptera.) **Nixon, H. L. & C. R. Ribbands.**—(See Hymenoptera.) **Norris, M. J.**—(See Orthoptera.) **Nunberg, M.**—(See Coleoptera.) **Olifan, V. I.**—Dva tipa periodichnosti v postembrional'nom razvitii nasekomykh, vyiavlennye pri izuchenii zakonomernostei ikh rosta (Dipt., Hym., Col.). [Compt. rendus Acad. Sci. U.S.S.R.] 85: 1407–1410, ill. **Pages, J.**—(See Smaller Orders.) **Pastrana, J. A.**—(See Lepidoptera.) **Poulson, D. F., V. T. Bowen, R. M. Hilse & A. C. Rubinson.**—The copper metabolism of Drosophila. [96] 38: 912–921. **Ratzerdorfer, C.**—Volumetric indices for the parts of the insect brain. A comparative study in cerebralization of insects. [101] 60: 131–153, ill. **Reinhardt, J. F.**—Some responses of honey bees to alfalfa flowers. [15] 86: 257–275, ill. **Remington, C. L.**—(See Lepidoptera.) **Ribbands, C. R.**—(See Hymenoptera.) **Roman, E., R. Le Coarer & Vital-Durand.**—(See Arachnida.) **Roonwal, M. L.**—(See Orthoptera.) **Roth, L. M. & E. R. Willis.**—Possible hygroreceptors in Aedes aegypti (L.) and Blatella germanica (L.).

[79] 91: 1–14, ill. **Saudray, Y.**—(See Arachnida.) **Scharrer, B.**—Further studies of the intercerebralis-cardiacum-allatum system of insects. [30] 103: 284. **Schilder, F. A.**—Korpergrosse und organzahl der organismen (facets of an insect eye, scales of lepidopterous wings incl.). Hallische Monographien, nr. 18, ill. Max Niemeyer Verlag Bruderstr. 6, Halle (Saale), Germany. DM 6.80. (Rev. by M. T. J. in [52] 45: 414.) **Shulov. A.**—(See Orthoptera.) **Smith, S. G.**—The cytology of some tenebrionoid beetles (Alleculidae, Melandryidae, Lagriidae, Tenebrionidae). [79] 91: 325–363, ill. **Sobels, F. H.**—(See Diptera.) **Stammer, H. J.**—Die verbreitung der endosymbiose bei den insekten. [149] 95: 23–42. **Strojny, W.**—(See Hymenoptera.) **Thienemann, A.**—(See Diptera.) **Toth, L.**—The role of nitrogen-active microorganisms in the nitrogen metabolism of insects. [149] 95: 43–62. **Turček, F. J.**—(See Diptera.) **Vaillant, F.**—(See Diptera.) **Wigglesworth, V. B.**—Symbiosis in blood-sucking insects. [149] 95: 63–69. **Wilkinson, W.**—(See Coleoptera.) **Wirth, W. W.**—(See Diptera.) **Wong, H. R.**—(See Hymenoptera.) **Woodward, T. E.**—(See Hemiptera.)

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Porter, J. C. & R. W. Strandtmann.—Nasal mites of the English sparrow (Acarina: Rhinonyssidae). [148] 4: 393–399, ill. **Robinson, A. G.**—Annotated list of predators of tetranychid mites in Manitoba (Acarina). [54] 82: 33–37. **Roman, E., Le Coarer & Vital-Durand.**—Deux cas d'infestation humaine par des acariens du genre Dermanysse observes dans l'est Lyonnais (Acarina, Gamasidae). [140] 19: 179–180, 1950. **Roth, V. D.**—A review of the genus Tegenaria in North America (Arachnida: Agelenidae). [152] 42: 283–288, ill. **Saudray, Y.**—Développement post-embryonnaire d'un iulide indigène Cylindroiulus (Aneuloboiulus) silvarum Meinert (Diplopoda). [24] 89: 1–14, ill. **Strenzke, K.**—Zur systematik westgrönländischer oribatiden (Acarina). [159] 149: 89–96.

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10: 225–234, ill. **Ross, H. H.**—Lectotypes of Hagen species belonging to certain families of Trichoptera (5 from West Indies). [115] 59: 31–36. **Schmid, F.**—The groupe de Enoicyla (Trichopt., Limnoph.). [149] 94: 207–226, ill., 1951. **Schmidt, E.**—Odonata nebst bemerkungen uber die Anomisma und Chalcopteryx des Amazonasgebiets. [29] 3: 207–256, ill. (*S). **Westfall, M. J.**—Celithemis bertha Williamson in Florida with a description of a new subspecies (Odonata). [64] 35: 109–116, ill. **Wray, D. L.**—Some new North American Collembola. [36] 47: 95–106 (*), ill.

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106, ill. (*S). **Ruppel, R. F. & D. M. DeLong.**—The Hyloidea of Mexico (Cicadellidae). [36] 47: 107–112 (*), ill. **Sailer, R. I.**—Circumpolar distribution of water boatmen (Corixidae). [43] 84: 280. **Woodward, T. E.**—Studies on the reproductive cycle of three species of British Heteroptera, with special reference to the overwintering stages. [126] 103: 171–218, ill. **Young, D. A.**—On the recognition of two economic scaphytopiine leafhoppers (Cicadellidae). [56] 54: 246–249, ill.

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2. Académie des Sciences, Comptes Rendus. Paris.
3. Academy of Natural Sciences of Philadelphia. Notulae Naturae.
4. Academy of Natural Sciences of Philadelphia. Proceedings.
5. Acta Biologica Venezuelica. Caracas.
6. Acta Biotheoretica. Leiden, Netherlands.
7. Acta Zoologica (Int. tidskrift för Zoologi). Stockholm.
8. Acta Zoologica Lilloana. Tucuman, Argentina.
9. American Entomological Society, Transactions. Philadelphia.
10. American Journal of Tropical Medicine & Hygiene. Baltimore, Md.
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13. American Museum Novitates. New York.
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15. American Naturalist. Lancaster, Pa.
16. Anatomical Record. Philadelphia.
17. Annales de Parasitologie humaine et comparée. Paris.
18. Annales des Sciences Naturelles, Zoologie. Paris.
19. Annals and Magazine of Natural History. London.
20. Annals of Applied Biology. London.
21. Annals of Tropical Medicine and Parasitology. Liverpool.
22. Anti-locust Bulletin. London.
23. Archives de Zoologie Expérimentale et Générale. Paris.
24. Archives de Zoologie Expérimentale et Générale. Notes et Revue.
25. Arkiv för Zoologi. K. Svenska Vetenskapsakademien, Stockholm.
26. Arthropoda. Asoc. Argent. Artropodologia. Buenos Aires.
27. Australian Journal of Scientific Research, Ser. B. Canberra.
28. Beiträge zur Entomologie (Deutsch. Ent. Inst.) Berlin.
29. Beiträge zur Fauna Perus. Jena.
30. Biological Bulletin. Woods Hole, Mass.
31. Biological Society of Washington, Proceedings. Washington, D. C.
32. Boletin de Entomologia Venezolana. Caracas.
33. Bombay Natural History Society, Journal.
34. Bonner Zoologische Beiträge. Bonn, Germany.
35. British Museum (Nat. Hist.), Bulletin. Entomology.
36. Brooklyn Entomological Society, Bulletin.
37. Broteria, Ser. trimestral. Lisbon, Portugal.
38. Buenos Aires. Instituto Nac. Investig. Ciencias Nat. Zoologica.
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44. Canadian Journal of Zoology. Ottawa, Canada.
45. Ceskoslovenska Spolecnost Ent., Casopis. (Acta Soc. Ent.) Prague.
46. Ceylon Journal of Science, Sect. B. Colombo.
47. Coleopterists' Bulletin. Arlington, Va.
48. Dusenia. Curitiba, Parana, Brazil.
49. Ecological Monographs. Durham, N. C.
50. Ecology. Durham, N. C.
51. Entomologica Americana. Brooklyn Ent. Soc.
52. Entomological Society of America, Annals. Columbus, Ohio.

53. Entomological Society of British Columbia, Proceedings. Vernon.
54. Entomological Society of Ontario, Annual Report. Guelph.
55. Entomological Society of Southern Africa, Journal. Pretoria.
56. Entomological Society of Washington, Proceedings. Washington, D. C.
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58. The Entomologist. London.
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60. Entomologist's Monthly Magazine. London.
61. Eos; Revista Española de Entomologia. Madrid.
62. Evolution. New York.
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66. Great Basin Naturalist. Provo, Utah.
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68. Harvard Museum of Comparative Zoology, Bulletin. Cambridge, Mass.
69. Hawaiian Entomological Society, Proceedings. Honolulu.
70. Hilgardia (California Agr. Expt. Sta.). Berkeley.
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84. Lambillionea (Union Ent. Belge). Brussels.
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91. Mocambique; Documentario Trimestral. Lourenço Marques.
92. Mosquito News. New Brunswick, N. J.
93. Musei Zoologici Polonici, Annales. Warsaw, Poland.
94. Musei Zoologici Polonici. Fragmenta Faunistica. Warsaw, Poland.
95. Naples Univ. Instituto e Museo Zoologico, Annuario.
96. National Academy of Sciences, Proceedings. Washington, D. C.
97. Natural History Miscellanea (Chicago Academy of Sciences).
98. Nature. London.
99. Naturforschende Gesellschaft Zurich, Vierteljahrsschrift.
100. Die Naturwissenschaften. Berlin.
101. New York Entomological Society, Journal.
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105. Office National Anti-acridien, Bulletin. Paris.
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109. Oyo-Kontyu (Nippon Society of Applied Entomology). Tokyo.
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115. Psyche; A Journal of Entomology. Cambridge, Mass.
116. Quarterly Journal of Microscopical Science. London.
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118. Revista de Investigaciones Agricultura. (Argent. Min. Agr.) B. A.
119. Revue Française de Lepidopterologie. Douelle, France.
120. Revue Suisse de Zoologie. Geneva, Switzerland.
121. Rio de Janeiro. Instituto Oswaldo Cruz, Memorias.
122. Rio de Janeiro. Museu Nacional do Brasil, Boletim, Zool.
123. Rivista di Parassitologia. Rome, Italy.
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126. Royal Entomological Society of London, Transactions.
127. Royal Society of London, Proceedings, Ser. B.
128. São Paulo, Brazil. Depart. Zool., Secr. Agr., Papéis Avulsos.
129. São Paulo, Brazil. Instituto Biologico, Arquivos.
130. Schweizerische Entomologische Gesellschaft, Mitteilungen. Bern.
131. Smithsonian Miscellaneous Collections. Washington, D. C.
132. Sociedad Cientifica Argentina, Anales. Buenos Aires.
133. Sociedad Entomológica Argentina, Revista. Buenos Aires.
134. Sociedad Mexicana de Historia Natural, Revista. Mexico City.
135. Société d'Histoire Naturelle de Toulouse, Bulletin.
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140. Société Linneenne Lyon, Bulletin Mensuel.
141. Société Zoologique de France, Bulletin. Paris.
142. Society for British Entomology, Journal. Bournemouth, England.
143. Society for British Entomology, Transactions. Bournemouth, Eng.
144. South London Entomological & Nat. Hist. Society, Proc. & Trans.
145. Southern California Academy of Sciences, Bulletin. Los Angeles.
146. Systematic Zoology. Washington, D. C.
147. Tennessee Academy of Sciences, Journal. Nashville.
148. Texas Journal of Science. College Station, Texas.
149. Tijdschrift voor Entomologie. Amsterdam.
150. Tohoku University. Science Reports, Ser. 4. Tohoku, Japan.
151. U. S. National Museum, Proceedings. Washington, D. C.
152. Washington Academy of Sciences, Journal. Washington, D. C.
153. Wasmann Journal of Biology. San Francisco, Cal.
154. Zoologica. New York.
155. Zoological Society of Bengal, Proceedings. Calcutta, India.
156. Zoological Society of London, Proceedings.
157. Zoologische Jahrbücher. Abt. Anatomie u. Ontogenie. Jena.
158. Zoologische Jahrbücher. Abt. Systematik, Ökologie u. Geogr. Jena.
159. Zoologische Jahrbücher. Abt. allg. Zoologie u. Physiologie. Jena.
160. Zoologischer Anzeiger. Leipzig.

Notice. The December 1952 issue of Entomological News was mailed at the Post Office at Lancaster, Pa., on December 15, 1952.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

American Sarcophagidae—wanted for identification. H. R. Dodge, P.O. Box 185, Chamblee, Georgia.

German lepidopterist wishes to correspond and receive live material (eggs and pupae) in exchange for dried imagoes. Johannes Reichel, Koenigsberg, Krs. Wetzlar 16, Germany.

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The Wasps of Penikese Island, Buzzards Bay, Massachusetts (Hymenoptera)

By Kenneth W. Cooper, University of Rochester,
Rochester, N. Y.

Penikese Island is a roughly L-shaped, tiny remnant of the Falmouth (or Buzzard Bay) terminal moraine, woodsless and windswept, lying in the waters of Buzzards Bay approximately one mile north of Cuttyhunk. Thus it is nearly at the end of the Elizabeth chain of islands that extends west southwest from Woods Hole, Massachusetts, and that separates the waters of Buzzards Bay from Vineyard Sound. The larger limb of Penikese runs due south and is no more than five-eighths of a mile in length and but a quarter of a mile in greatest width. The smaller limb, known as Tub Point, is joined to the main island by a barrier beach, runs to the southeast somewhat less than three-eighths of a mile, and is not quite a quarter of a mile wide at its greatest breadth. The island is low in profile, rising at no point more than 85 feet above sea level. Perhaps 80 acres of land lie above the limits of high tide, and fully half of Penikese's acreage lies between sea level and the 20-foot contour line. More or less temporary fresh-water ponds, as well as brackish ponds, stand in certain hollows of the island, and nearly two acres of marsh occupy the northeastern margin of the main body of Penikese (map in Lewis, 1924). The closest reach of the mainland of Massachusetts is Mishaum Point, south of New Bedford, approximately 4.4 miles NNW of Penikese. Further details of Penikese may be found in the accounts by Jordan (1874), Hollick (1901), Lewis (1924), Coker (1926), Fogg

2 5 1953

(1930), and Woodworth and Wigglesworth (1934). Hollick has summed up the island's attributes, declaring Penikese to be ". . . about as barren and unattractive a pile of gravel and bowlders as can well be imagined."

It was on Penikese, in 1873, that Louis Agassiz founded the first seaside laboratory in North America, the Anderson School of Natural History, and interest in the island and its fauna and flora stems partly from its biologically notable past. When Agassiz brought his students there, Penikese was treeless, virtually shrubless, and covered with little more than common types of flowering plants and grassy pasturage for the sheep grazed there (Jordan, 1874), although when first known, at the start of the 17th Century, it appears to have been covered with woods in which a cedar predominated (*v.* Fogg, 1930).

Since Agassiz' time the island has been employed as a turkey farm (in the early 1890s at least; see Morse, 1894), as a sheep pasturage until 1910, and from 1905–1921 a leper colony was maintained on Penikese. Not unexpectedly a sizeable floral change came about in this period, man probably being the primary agent of dissemination. Shaw (in Lewis, 1924) and, especially, Fogg (1930) give valuable and detailed accounts of the flora of Penikese, and discuss in considerable detail the extent and nature of the floral changes that have occurred there. Today the island has a few introduced poplars and other trees, and a fair number of shrubs are established, including staghorn sumach, scrub willows, and common elder, which provide potential nesting sites for twig-dwelling wasps. As a whole the flora is still overwhelmingly an herbaceous one, and along with the large colony of common and roseate terns that nest at the north end of Penikese, common plants such as *Agrostis alba, Agropyron repens, Anthoxanthum odoratum, Holcus lanatus, Plantago, Cakile, Capsella, Rumex, Nepeta* and *Achillea* are today fully as typical floral elements of Penikese as they were in Agassiz' time, nearly 80 years ago. *Daucus carota,* at the flowers of which so many wasps were captured in 1947, is a newcomer to Penikese since Agassiz' day.

On August 7, 1923, biologists from Woods Hole celebrated the fiftieth anniversary of the founding of Agassiz' laboratory by undertaking a one-day biological survey of Penikese, the results of which have been brought together in interesting catalogs of the flora (Lewis, 1924) and fauna (Coker, 1926). Again, on August 3, 1947, a similar party of biologists commemorated (somewhat prematurely) the 75th anniversary by another collecting trip on Penikese. The day was sunny and hot but, unhappily for the hymenopterist, a stiff, unrelenting breeze made the survey of flying insects difficult, except in protected hollows and lees. Collecting began at approximately 11:30 AM and was over by 3:30 PM. The wasps listed below were collected by Drs. C. Nelson, H. Knudsen, J. A. Moore, P. W. Whiting and myself, and remained in my possession for identification; most specimens are now on deposit in the U. S. National Museum. The nomenclature in the following list is that of Muesebeck, Krombein and Townes (1951) for all but the ants; for the latter I have followed Creighton (1950). In each instance bracketted initials identify the collector.

CHRYSIDIDAE

Chrysis (Chrysogona) perpulchra Cresson.—1 ♂ (PWW). I have also taken this chrysid at Woods Hole in July; the normal host is said to be *Sceliphron,* a common wasp of Penikese.

Chrysis (Tetrachrysis) coerulans Fabr.—1 ♂, at flowers of *Daucus carota* (KWC); also common at Woods Hole from June through mid-September.

TIPHIIDAE

Tiphia intermedia Mall.—1 ♀, 4 ♂♂ at *Daucus* (CN; KWC). Fairly common at Woods Hole, Barnstable and Acoaxet during August; identifications by kindness of K. V. Krombein.

Myzinum 5-cinctum (Fabr.).—4 ♀♀, 3 ♂♂ at flowers of *Achillea millefolium* (JAM; KWC); very common at Woods Hole from July through August.

MUTILLIDAE

Dasymutilla gibbosa (Say).—1 ♀, 2 ♂♂ on beach near Typha Pond (KWC); also taken at Woods Hole in early September.

D. lepeletierii (Fox).—1 ♂, flying over beach in lee of embankment (KWC); frequent at Woods Hole during August.

FORMICIDAE

Myrmica americana Weber.—(KWC); also recorded from Woods Hole by Sturtevant (1931).

M. emeryana Forel.—Recorded from Penikese by W. M. Wheeler; see Coker, 1926.

Pheidole pilifera (Roger).—(KWC); Wheeler (1906) records this ant from Naushon Island of the Elizabeth chain.

Crematogaster lineolata (Say).—(KWC); both Wheeler (1906) and Sturtevant (1931) record this ant from Woods Hole, where I too have taken it commonly.

Lasius (Lasius) alienus americanus Emery.—Recorded from Penikese by W. M. Wheeler, see Coker (1926); Wheeler (1906) and Sturtevant (1931) record this ant from Woods Hole, where I also have taken it.

Lasius (L.) niger neoniger Emery.—(KWC); recorded by Sturtevant (1931) from Woods Hole, where I too have taken it.

Lasius (Chthonolasius) brevicornis Emery.—(KWC); recorded from Penikese by W. M. Wheeler in Coker (1926), and from Woods Hole by Wheeler (1906), Sturtevant (1931), and myself.

VESPIDAE

Rygchium hidalgo boreo-orientalis (Bequaert).—1 ♀, 1 ♂ from flowers of *Achillea* and *Daucus* (CN; KWC). I have taken this wasp at Woods Hole (Cooper, 1950) and on Nonamesset Island of the Elizabeth chain from July through mid-September.

Stenodynerus (Stenodynerus) anormis (Say).—4 ♀♀, 1 ♂ at flowers of *Daucus* and *Nepeta cataria* (HK; KWC); also taken at Woods Hole in August.

Stenodynerus (St.) clypeolatus (Dalla Torre).—2 ♀♀ at flowers of *Daucus* (HK; KWC); also taken at Woods Hole in June.

Stenodynerus (Parancistrocerus) pennsylvanicus (Saussure).—1 ♂, (CN); rather common at Woods Hole and on Nonamesset Island from July through mid-September.

POMPILIDAE

Episyron biguttatus (Fabr.).—1 ♀, 2 ♂♂ at flowers of *Daucus* (KWC); common at Woods Hole and on Nonamesset Island from July through August.

E. quinquenotatus (Say).—4 ♂♂ at flowers of *Daucus* (CN; KWC); occurs at Woods Hole from June through August, and I have also taken this species at Acoaxet in August.

Anoplius (Anoplius) ithaca (Banks).—1 ♀ (JAM); identification of this wholly unexpected wasp was very kindly verified by H. E. Evans.

Anoplius (Arachnophroctonus) marginalis (Banks).—2 ♀♀, 1 ♂ at flowers of *Daucus,* as well as one female hunting at grassy margin of beach (KWC); very common at Woods Hole in July and August.

Anoplius (Ar.) relativus (Fox).—2 ♂♂, at flowers of *Achillea* and *Daucus* (KWC); also taken at Woods Hole in August.

Anoplius (Pompilinus) marginatus (Say).—2 ♀♀, 2 ♂♂ at flowers of *Daucus* (KWC); very common at Woods Hole and on Nonamesset and Naushon of the Elizabeth chain from July through mid-September.

Anoplius (Lophopompilus) atrox (Dahlbom).—1 ♀, 1 ♂ at flowers of *Daucus* (KWC); also taken at Woods Hole and on Nonamesset Island in August and early September.

SPHECIDAE

(*Larrinae*)

Lyroda subita (Say).—6 ♀♀, 3 ♂♂ on sandy patch of grassy beach at northeastern end of the main body of Penikese (CN; KWC). One female wasp was captured while dragging a paralyzed juvenile female *Nemobius fasciatus* through a patch of of exposed grassroots. Also common on Nonamesset Island in August.

Tachysphex tarsatus (Say).—1 ♀ (KWC); also taken at Woods Hole, Nonamesset Island, and Barnstable dunes in July and August.

Tachysphex terminatus (Smith).—2 ♀♀, 3 ♂♂ (including 1 mated pair) in company with *Lyroda* (KWC); common at Woods Hole and on Nonamesset Island (also in the company of *Lyroda*) in August.

(*Sphecinae*)

Sphex (Priononyx) pubidorsus (Costa).—1 ♀, hunting among grassroots in protected hollow (KWC); I have also taken this wasp at Barnstable in August.

Sphex (Sphex) ichneumoneus (Linn.).—1 ♀, 2 ♂♂ at *Daucus* and *Nepeta* (CN; KWC); common everywhere on the Cape in my experience.

Podalonia violaceipennis (Lepel.).—1 ♀, 2 ♂♂ (CN; HK); frequent at Woods Hole July through mid-September.

Ammophila kennedyi (Murray).—1 ♂ at flowers of *Achillea* (KWC).

Ammophila placida Smith.—1 ♀ (CN); common at Woods Hole and Nonamesset Island from mid-June through mid-September.

Sceliphron caementarium (Drury).—1 ♀, 2 ♂♂ at *Daucus* flowers, and nesting on old buildings and ruins (CN; KWC); abundant at Woods Hole from June through mid-September.

(*Nyssoninae*)

Epibembix spinolae (Lepel.).—4 ♀♀, 4 ♂♂, common on all sandy patches, and at *Daucus* and *Nepta* (CN; HK; KWC); common at Woods Hole, Nonamesset Island, Barnstable, Provincetown, and Acoaxet from July to September.

(*Philanthinae*)

Philanthus gibbosus (Fabr.).—3 ♀♀ at *Daucus* flowers (KWC); common at Woods Hole through the summer.

(*Crabroninae*)

Lestica (Solenius) interrupta (Lepel. et Brullé).—1 ♂ at flowers of *Daucus* (KWC); frequent at Woods Hole in July and August.

Oxybelus emarginatus Say.—1 ♀ (KWC); also collected at Provincetown, Barnstable, and Nonamesset Island in August, as well as at Woods Hole in July and August.

O. quadrinotatus Say.—1 ♀ (KWC); also occurs at Woods Hole in August.

It is difficult to guess at how complete this list may be for August's wasps on Penikese. Certainly it is a complete record for every species seen by me on the island, for none was seen that was not captured. But the wind was so strong and persistent that only larger wasps, or those small ones whose niches included protected hollows, were on the wing. Although the inhabitants of a small island such as Penikese are always of special interest, a glance over the list of those wasps found produces few surprises, lest it be that so many forms were found in an environment that seems so unpromising. All of the species are known from immediately adjoining localities and states, and the fauna is largely Transitional.

The one genuinely surprising record is that of *Anoplius ithaca* which, on the basis of a very extensive collecting experience and study, had seemed to Evans (1948, 1951) to be a wasp of local occurrence, confined to the very special habitat of rocky stream beds (as, for example, along the Westfield River in Hampshire Co., Mass.). Now Penikese lacks streams and running waterways but, owing to its morainal origin and the persistent harshness of wave and wind action, possesses extensive rocky tracts, especially along its western margins. Perhaps, then, stretches of exposed boulders, scattered rocks and gravels provide *ithaca's* special environmental needs. If this be the case, then streamside habitats would be the most frequent mainland but inland localities of the sort *Anoplius ithaca* requires, for only along waterways would rocky beds and stretches commonly be found that remain uncovered by soil and organic debris. Along the coast, *A. ithaca* may be expected to frequent some boulder strewn, stony beaches.

LITERATURE CITED

COKER, R. E. (editor). 1926. Fauna of Penikese Island, 1923. Biol. Bull. 50: 17–37.

COOPER, K. W. 1950. Zethus, Pachodynerus and other southern wasps from Massachusetts (Hymenoptera: Vespoidea; Sphecoidea). Ent. News 61: 104–105.

CREIGHTON, W. S. 1950. The ants of North America. Bull. M. C. Z. 104: 1–585.

EVANS, H. E. 1948. Biological notes on two species of Anoplius (Hymenoptera: Pompilidae). Ent. News 59: 180–184.

EVANS, H. E. 1951. A taxonomic study of the nearctic spider wasps belonging to the tribe Pompilini (Hymenoptera: Pompilidae). Part II. Genus Anoplius Dufour. Trans. Amer. Ent. Soc. 76: 207–361.

Fogg, J. M. 1930. The flora of the Elizabeth Islands, Massachusetts. Rhodora 32: 119–132, 147–161, 167–180, 208–221, 226–258, 263–281.

Hollick, A. 1901. A reconnoissance of the Elizabeth Islands. Ann. N. Y. Acad. Sci. 13: 387–418.

Jordan, D. S. 1874. The flora of Penikese Island. Amer. Nat. 8: 193–197.

Lewis, I. F. 1924. The flora of Penikese, fifty years after. Rhodora 26: 181–195, 211–219, 222–229.

Mather, K. F., R. P. Goldthwait, and L. R. Thiesmeyer. 1942. Pleistocene geology of western Cape Cod, Massachusetts. Bull. Geol. Soc. Amer. 53: 1127–1174.

Morse, A. P. 1894. Notes on the Orthoptera of Penikese and Cuttyhunk. Psyche 7: 179–180.

Muesebeck, C. F. W., K. V. Krombein, and H. K. Townes. 1951. Hymenoptera of America North of Mexico. Synoptic Catalog. U. S. Dept. Agric., Agric. Monograph No. 2, pp. 1–1420.

Sturtevant, A. H. 1931. Ants collected on Cape Cod, Massachusetts. Psyche 38: 73–79.

Wheeler, W. M. 1906. Fauna of New England. 7. List of the Formicidae. Boston Soc. Nat. Hist., Occ. Papers 7: 1–24.

Woodworth, J. B., and E. Wigglesworth. 1934. Geography and geology of the region including Cape Cod, the Elizabeth Islands, Nantucket, Marthas Vinyard, No Mans Land, and Block Island. Mem. M. C. Z. 52: 1–xvi, 1–322.

Collection and Laboratory Maintenance of Dytiscidae (Coleop.)

By Edward S. Hodgson, Department of Zoology,
Barnard College, Columbia University

Certain species of Dytiscidae, notably *Laccophilus maculosus* Germ., have recently proven to be excellent experimental animals for studies on the physiology of chemoreception (Hodgson, 1951; Physiol. Zool. 24: 131–40). The smaller forms such as *Laccophilus* and *Coptotomus* can usually be collected in large numbers from grassy banks of permanent ponds as are usually found at fish hatcheries. They are easy to transport alive in water or in containers half filled with wet grass.

When the beetles are being used in the laboratory, it is often desirable to keep large stocks on hand, and due to the cannibalistic habits of the beetles, this poses a considerable problem. The following method has been used with success in our laboratory for two years. Aquaria are filled with tap water and bricks placed on the bottoms of the aquaria; the bricks are stood on edge. The water is kept in motion by bubbling air from a compressed air line or aquarium aeration pump through the water. When the beetles are introduced into the aquarium, they cling to the bricks and move about very little. This is an important factor in reducing the mortality rate in stocks over periods of several weeks, since much of the mortality results from chance encounters of swimming beetles. An aquarium holding 40 gallons of water will accommodate about 1000 beetles in this fashion without overcrowding—smaller aquaria holding proportionately less. With such an arrangement, only about 10% of the beetles will fall victim to cannibalism each month. Care must be taken to make sure that the water is not moving so rapidly that the beetles cannot reach the surface periodically to replenish their air supplies. In our cultures, wooden floats were provided, which permitted the beetles to dry themselves at intervals during feeding. Wire screening must be used over the aquaria to prevent the escape of flying beetles.

Meat scraps and fish food ("Tropicala No. 2") were fed daily, and the aeration stopped only for a feeding period of one hour. The formation of a surface film is prevented by the aeration and resulting currents of water, and any excess food accumulating on the bottom of the aquarium seems to do no particular harm.

The beetles have frequently been observed mating but no larvae have been seen in the cultures; possibly any larvae which appeared were eaten by the adults. Because of the abundance of the adults, no attempt has been made to find special methods of rearing the beetles through a complete life cycle.

Two New Species of Milichiidae, with Miscellaneous Notes on the Family (Diptera)

By Curtis W. Sabrosky, Bureau of Entomology and Plant
Quarantine, Agricultural Research Administration,
U. S. Department of Agriculture

In a recent study of the dipterous family Milichiidae, two new species have been recognized and some miscellaneous notes accumulated. Revisionary work is being continued on two large genera, *Desmometopa* and *Milichiella,* but the notes presented here are not relevant to that study.

Eusiphona flava, new species

Like the genotype, *Eusiphona mira* Coq., in habitus and structural characters, but predominantly yellow.

Female.—Yellow to orange-yellow, only the arista, front, upper half or more of occiput, mesonotum except laterally, basal portion of disk of scutellum, and metanotum black in ground color; front densely pollinose and appearing golden yellow from certain aspects; mesonotum dull, yellowish-gray pollinose with a suggestion of three brown stripes, when viewed from behind; lateral yellow areas of mesonotum include the humeri and notopleural and supra-alar areas.

Head in profile as in *mira* (cf. Curran, 1934, "The Families and Genera of North American Diptera," p. 335, fig. 12), but the proboscis proportionately longer, each section 1.5 times the height of the head; wing approximately as figured by Curran (l.c., fig. 5)., but the first posterior cell only slightly broadened opposite the hind crossvein, the anterior crossvein directly behind the junction of first vein with costa, and thus the penultimate section of fourth vein nearly 4/5 the length of that of the third vein.

Length, 3 mm.

Holotype, Kanab, Utah, Aug,. 17, 1950 (G. F. Knowlton). Type No. 61616 in the U. S. National Museum, deposited through the courtesy of the collector.

No other species of the genus has been described since Coquillett (1897) erected it for a single species, *mira,* then presumed to belong to the Larvaevoridae (Tachinidae). The genotype is an entirely black fly and thus strikingly contrasted with the new species.

Stomosis Melander

Stomosis Melander, 1913, Jour. New York Ent. Soc. 21: 242. Type, *Desmometopa luteola* Coquillett (Monobasic.)

Siphonomyiella Frey, 1919, Öfvers. finska Vetensk. Soc. Förh. 60A, no. 14, p. 16. Type, *Siphonomyiella rufula* Frey (Monobasic). New synonymy.

The description and the figures of head and wing of *Siphonomyiella,* described from Rio de Janeiro, Brazil, agree completely with the North American *Stomosis.* I have seen no Brasilian material of the genus, and cannot comment on the status of *Stomosis rufula* (Frey) [new combination]. The genotype, *luteola* (Coq.), was described from Williams, Arizona, has been recorded from Texas (Melander, 1913), and is known to me from Lafayette, Indiana, Falls Church and Alexandria, Virginia, and East Lansing, Michigan. At Falls Church, Virginia, April 15, 1951, it was reared from debris in the crotch of a tree (W. W. Wirth). In the U. S. National Museum there is a long series from Higuito, San Mateo, Costa Rica (Pablo Schild), which was apparently correctly determined by J. M. Aldrich as *luteola.*

Hemeromyia washingtona (Mel.)

Paramadiza washingtona Melander, 1913 (Sept.), Jour. New York Ent. Soc. 21: 246 (Washington).

Hemeromyia washingtona (Melander) Melander, 1913 (Oct.), Psyche 20: 169.

Hemeromyia nitens Melander, 1913 (Oct.), Psyche 20: 169. (Melander's statement that "*Hemeromyia nitens* Malloch" is a synonym of *washingtona* was based on the type of *nitens,* but the latter had not yet been published and the name must therefore be credited to Melander. When Malloch's paper did appear, the name was given as *nitida.*)

Hemeromyia nitida Malloch, 1913 (Dec. 6), Proc. U. S. Nat. Mus. 46: 146 (Colorado).

As far as I am aware, only two specimens of this species have been reported, the types of *washingtona* and *nitida*. A new record of this rare species suggests that its obscure habitat is the reason why it has not been found more often. Four specimens were reared by H. B. Morlan on April 19, 1952, at Santa Fe, N. Mex., from pupae collected on March 27, 1952, in a nest of *Peromyscus truci.*

Neophyllomyza anuda (Curran), new combination

Desmometopa anuda Curran, 1936, Proc. Calif. Acad. Sci. 22 (1): 45, 46 (Anuda Island, Solomons).

Hennig (1939, Arb. über Morph. u. Taxonom. Ent. Berlin-Dahlem 6: 88) suggested that *anuda* was probably a subspecies of *Desmometopa palpalis* Meijere, but I find from a paratype kindly loaned me by Dr. Curran that the species is a *Neophyllomyza*. As now recognized, the latter is characterized by having two divaricate upper orbital bristles, and the third and fourth costal sectors equal in length. I may point out also that in the species known to me, the crossveins are approximated compared with the related genus *Phyllomyza*.

Several specimens of *anuda* are before me from Guadalcanal Island, 1944 and Jan. 28–Feb. 2, 1945 (C. O. Berg). A number of species of *Neophyllomyza* are known from Java and Formosa, but I have no material available for comparison to determine further the status or relationships of *anuda*.

COSTALIMA new genus

Near *Microsimus* Aldrich, and somewhat more distantly related to *Phyllomyza* and *Neophyllomyza*, but with two pairs of divergent upper orbitals, three pairs of strong and widely-spaced dorsocentral bristles, no prescutellar acrostichals, and a pair of strong proclinate bristles on the lunule.

Head broad and short; occiput strongly concave, viewed from above; front broad, over half the width of the head, with broad shining parafrontals and a shining frontal triangle that reaches to the lunule; eyes sparsely short haired; face concave; palpi slender, not unusually enlarged and only slightly projecting beyond the oral margin, approximately the same in both sexes, sparsely and finely bristled; proboscis short, fleshy, inconspicuous; antennae porrect, second and third segments subequal in length, third broader than long, subquadrate; arista pubescent; two pairs of well-separated lateroclinate upper orbitals and two pairs, one strong and one short slender, of convergent lower orbitals; lunule with a pair of strong, widely separated bristles that are convergent at tips; the proclinate and divergent ocellars, cruciate postverticals and divergent outer and convergent inner vertical bristles all well developed.

Thoracic chaetotaxy: Three equally strong and widely spaced dorsocentral bristles, the anterior one opposite the end of the mesonotal suture; no prescutellar acrostichals; 1 long humeral, 1 presutural, 1 + 1 notopleural (weak), 1 supra-alar (in the prealar position), 1 intra-alar, 2 postalar (the posterior much weaker than the anterior), 2 scutellar, 1 propleural and 1 stigmatal (both pale and weak, and almost hairlike), 1 sternopleural; mesopleuron bare; scutellum bare outside the bristles; mesonotal hairs sparse.

Wing similar to *Microsimus* and *Phyllomyza,* costa extending to fourth vein, and the second vein long and curving throughout its length, the third costal sector notably shorter than the fourth; crossveins well out on the disk of the wing, beyond the apex of first vein, the fore crossvein at approximately the outer two-thirds of the discal cell, and separated from the hind crossvein by approximately the length of the latter; discal cell broad distally, the hind crossvein well over twice the length of the fore crossvein.

Type of genus: *Costalima myrmicola,* new species.

The genus is dedicated to the distinguished Brasilian entomologist, Dr. A. M. da Costa Lima.

Costalima myrmicola new species

♂, ♀—Reddish yellow to brown, the intensity of color possibly depending on the maturity of the specimens; in the darkest individual, the arista black, frontal triangle, occiput and small spot at base of arista brown, mesonotum, scutellum and abdomen dark brown, and the rest of body and legs yellow; in paler specimens the head and dorsum of thorax reddish yellow.

Head broad, its length only one-third the breadth and only slightly less than its height; width of cheek nearly three-tenths the height of an eye and half the breadth of the third antennal segment. Thoracic bristles long, strong and conspicuous except for the notopleural, supra-alar, intra-alar and posterior postalar; apical scutellar bristles long, over twice the length of the basal scutellars. Fifth abdominal segment with long and strong marginal bristles, those on the other segments ordinary.

Length, 1.5–2 mm.

Holotype female, *allotype*, and three paratypes (♂, 2 ♀♀), Viçosa, Minas Gerais, BRASIL, June 10, 1944, in nest of *Azteca* ant in *Cecropia* tree trunk (H. L. Parker, No. 953.20). Type No. 61617 in the U. S. National Museum.

A single female from Barro Colorado Island, PANAMA CANAL ZONE, January 1947 (N. L. H. Krauss), is similar to the above, but I am not sure whether it is *myrmicola* or represents a new but very closely related species.

Polyvinyl Alcohol with Lacto-phenol, a Mounting and Clearing Medium for Chigger Mites[1, 2]

By LOUIS J. LIPOVSKY

Polyvinyl alcohol with lacto-phenol has been used as a mounting medium for chiggers at the University of Kansas since 1947. Early preparations were made without specific attention given to the heat or the amount of heat applied to clear the medium, or to the age of the medium; however, the proportions were generally as given by Wilbur G. Downs, 1943 (Science 97 (2528): 539–540). These mixtures were unpredictable. Of approximately 15,000 chiggers mounted, hundreds have required re-

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[1] The studies upon which this paper is based were conducted under contract, N6 ori 220 Task Order II, between the University of Kansas and the Office of Naval Research.

[2] Contribution number 789 from the Department of Entomology, University of Kansas.

mounting for several reasons: the medium retreated from the specimen, sometimes forming maze-like air spaces around it; not infrequently, the refractive index became unsatisfactory; following prolonged drying, the medium contracted sufficiently to fracture the cover glass over the specimen by drawing it too close to the slide. These were the most serious difficulties experienced other than some crystallization of the phenol, which can be serious when the specimen is extensively involved. These inconsistencies have been eliminated by following a standardized procedure in the preparation of the medium.

The polyvinyl alcohol (PVA) used (Grade RH-349, E. I. du Pont de Nemours Company) is a fine white powder. It is wettable in cold water but will not wet or disperse in warm or hot water. The ingredients and proportions are those given by Downs: 22 c.c. of 85 per cent lactic acid (analytical agent), 22 c.c. of pure phenol, and 56 c.c. of water saturated with PVA powder. The PVA is sifted slowly through a fine mesh screen onto the surface of the water to insure an even and gradual dispersion; the screening also removes undesirable foreign matter as well as the larger granules of PVA, thus eliminating the problem of filtering. The amount of PVA added to the water is limited to the total amount wetted with stirring, and until the mixture becomes a thick, crumbly, milky paste. It is not necessary to clear this mixture in a hot water bath.

The phenol, generally crystalline, is heated slightly until liquified; the lactic acid (which prevents the recrystallization of the phenol) is added to the phenol and mixed. This mixture of acids is then added to the PVA paste and stirred. This combination should not be heated to clear; clearing will take place gradually. Soon after the acids are added, the PVA lactophenol mixture becomes extremely viscous and mucoid; however, as it continues to clear, the viscosity of the mixture decreases and it liquifies within a few hours to the consistency of a light syrup. This final mixture is stored in dark bottles or jars to prevent discoloration and other undesirable changes resulting from prolonged exposure to light. The mixture is now ready for use and should be dispensed only in small quantities as needed for several week periods. When exposed to light for a number of months, it becomes brown in color, appears to thicken without apparent evaporation, and becomes unsatisfactory for mounting chiggers.

It is known that some workers who have used PVA in some form or another have commented upon the erratic results often obtained, and for this reason have discontinued its use in slide preparations. Total acids in excess of 50 per cent by volume will result in a medium which may remain tacky and unhardened. With less than the recommended amount of acids the medium may not clear sufficiently to produce satisfactory mounts either in refractive qualities or in the embedding qualities, although the medium becomes appreciably harder upon drying. Furthermore, slides prepared with medium deficient in acids require an excessive number of hours to soak the cover glasses free for remounting; in addition, strands of undissolved medium on the specimens cannot be removed readily, and when remounted the medium does not appear to be as refractive around the edges of the specimens. This condition is especially noticeable when examined under the phase-contrast microscope. The fracturing of cover glasses over the embedded specimens is the result of an inadequate amount of PVA in the mixture.

Better preparations are obtained from specimens which have been preserved for at least a week in 70 to 80 per cent alcohol than from fresh material; however, fresh specimens can be mounted when quick determinations are needed. The mounting of fresh specimens usually results in poor definition.

The following procedure for mounting chiggers and other micro-invertebrates has proved very satisfactory. Chiggers are removed individually from alcohol and centered on a clean slide. A fine tipped medicine dropper may be used for this operation and the excess fluid may be blotted off the slide. The mounting medium is then placed on the centered specimen followed by the placement of the cover glass. The slide is then heated to remove all bubbles which may be present or which may form upon heating. A temperature controlled hot plate is best suited for this purpose. After the bubbles are removed, gentle heating is continued on a slide warmer. After approximately 24 hours, the specimen should be sufficiently cleared and the cover glass will be set for immersion oil use. Exposure to heat seems necessary for good quality slide preparations.

A Bibliographic Note on Three Species of Ephemeroptera Described by Say

The place of publication of the original description of three species of mayflies described by Thomas Say apparently has been consistently mis-cited for more than 80 years. The species involved are *Siphlonurus alternatus, Hexagenia bilineata,* and *Ephoron album.* They were described by Say in the Appendix to Volume II of Keating's *Narrative of an Expedition to the Source of St. Peters River, Lake Winnepeek, Lake of the Woods &c. &c. by order of The Hon. J. C. Calhoun, Secretary of War, under the command of Stephen H. Long Major U. S. T. E.* (Cary and Lea, Philadelphia, 1824), pp. 303–305 (Reprinted by LeConte, 1859, in: *The complete writings of Thomas Say,* Vol. 1, pp. 203–205). An account of the swarming of *Ephoron album* appears on pp. 114–115 of the same volume. Correct citations were given by Hagen (1861) in his *Synopsis of the Neuroptera of North America,* but apparently starting with Eaton (Trans. Ent. Soc. London, 1871: 8) the citation is given as Volume 2 of the Western Quarterly Reporter, and dated variously as 1823 or 1824. Eaton (*loc. cit.*) indicates that he did not see the original of Say's work and apparently has made an error in reading the LeConte reprint. The error has been faithfully repeated by numerous writers since that time. —GEORGE F. EDMUNDS, JR., University of Utah.

Pseudocneorrhinus bifasciatus Roelofs Extending Its Range in New Jersey (Col. Curculionidae)

This weevil which is the *P. setosus* of American authors, according to the Blackwelders' "Fifth Supplement to the Leng Catalogue of Coleoptera of America, North of Mexico" (1948), is extending its range in New Jersey. It is listed in the Leng & Mutchler "Catalogue of the Coleoptera of America, North of Mexico" (1927), from Connecticut and Japan. Introduced from Japan, it was reported from Connecticut in 1923. It was first noted in New Jersey at South Orange during September, 1947, the adults having been taken while feeding on the leaves of privet, mimosa, Japanese barberry, rhododendron and a few other ornamental plants. Shortly afterward it was collected at West Orange, Maplewood, Orange and Newark, all in New Jersey. It has also been reported from New York City.

During September, 1952, Mr. Robert J. Sim collected the species at Morrestown, N. J., where it was doing considerable damage to the foliage of azalaes and other shrubs. In spite of its injury to foliage, it does not appear at present to be an insect of prime economic importance. During the thirty years since it was reported from Connecticut, the species has no doubt invaded a larger area of New Jersey than is indicated by the localities mentioned.—HARRY B. WEISS.

The Lone Star Tick in Staten Island, New York (Acarina: Ixodidae)

By JOHN W. H. REHN, First Army Area Medical Laboratory, New York 7, N. Y.

The Lone Star Tick, *Amblyomma americanum* (Linnaeus) is usually considered to breed as far north as southern New Jersey and Pennsylvania. The only records of this species north of this area are either very old, 1740–1830, or clearly represent accidental importations.[1]

In May, 1952, a partially engorged female *Amblyomma americanus* was removed from a child at Fort Wadsworth, Staten Island, and sent to this laboratory for identification. The child had not been off this island for several months and left the military installation only to go to school. Therefore, the tick was undoubtedly picked up on this island. Investigation failed to recover additional examples. However, it seems probable that individuals have been introduced from the south and the species may now be established on Staten Island.

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[1] BEQUAERT, J. C. 1946. The ticks, or Ixodoidea, of the northeastern United States and eastern Canada. Entomologica Americana, XXV (M.S.), p. 183.

Current Entomological Literature

Compiled by **VENIA T. PHILLIPS**, Librarian

Academy of Natural Sciences of Philadelphia

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania pertaining to entomology, including all arthropods except Crustacea. Coverage will be world-wide as regards major contributions to systematics as well as for all papers on morphology, physiology, embryology, etc. In addition, for species from the Americas and the Pacific (Nearctic, Neotropical and Polynesian regions) all minor contributions to taxonomy, distribution, etc., will also be recorded.

This list gives references of the year 1952 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

GENERAL—Bartlett, B. R. and J. C. Ortega.—Relation between natural enemies and DDT-induced increases in frosted scale and other pests of walnuts. [76] 45: 783–784. **Beard, E.**—The early-American silkworm. [Frontiers] 17: 35–38, 62, ill. **Belkin, J. N. and W. A. McDonald.**—Preparing Lepidoptera for class study. [85] 6: 61–63, ill. **Box, H. E.**—Informe preliminar sobre los taladradores de la caña de azucar (Diatraea spp.) en Venezuela. [Bol. téc. Div. Ent., Inst. Nac. de Agr. Venezuela] 2: 1–72, ill. **Brown, F. M.**—Statistics and taxonomy again. [85] 6: 67. **Brues, C. T.**—Some evolutionary features inherent in the insect faunas of the tropics. [Quart. J., Fla. Acad. Sci.] 15: 149–154. **Campbell, W. V. and R. E. Hutchins.**—Toxicity of insecticides to some predaceous insects on cotton. [76] 45: 786–789, 828–833. **Corbet, P. S.**—(See Smaller orders.) **Flanders, S. E.**—A method for transferring infestations of purple scale. [76] 45: 891. **Fleming, W. E., H. W. Allen and F. W. Poos.**—Traber Norman Dobbins, 1896–1952. [76] 45: 903. (Obit.) **Forbes, W. T. M.**—Footnote to Brown's Statistics. [85] 6: 67. **Harris, L.**—Henry W. Eustis. [85] 6: 77. (Obit.) **Jackson, W. B.**—Population of the wood-mouse (Peromyscus leucopus) subjected to the application of D.D.T. and parathion. [49] 22: 259–81. **Keilbach, R.**—Schalenasymmetrien bei rezenten und fossilen Ostrakoden und das Alter der asymmetrischen Flügellage bei Insekten. [160] 149: 147–57. **Klots, A. B.**—Marguerite S. Forsyth. [85] 6: 76–77. (Obit.) **Knowlton,**

G. F.—Range entomology. [Utah Agr. Expt. Sta. Mimeo. Sheet] 391: 1–3. **Linsley, E. G., J. W. MacSwain and R. F. Smith.**—Outline for ecological life histories of solitary and semi-social bees. [50] 33: 558–567. **Ludwig, A.**—Die Blattminen des Siegerlandes und der angrenzenden gebiete. (Includes classified list of miners and a long list of host plants.) [Abhand. Landesmuseum f. Naturk. zu Münster in Westfalen] 15, heft 2. 48 pp. **McGregor, S. E. and T. F. Buehrer.**—A nectarometer. [76] 45: 895. **Martorell, L. F. and J. Adsuar.**—Insects associated with papaya virus diseases in the Antilles and Florida. [76] 45: 863–869. **R., W. A.**—Obituary. Keith Collingwood McKeown. [Aust. Mus. Mag.] 10: 371. **Roan, C. C.**—Tagging oriental fruit flies with radioactive phosphorus for field-movement studies. [76] 45: 826–828. **Rosine, W. N.**—Qualitative distribution of aquatic invertebrates among the plants in Muskee Lake, Col. [Jr. Col.-Wyo. Acad. Sci.] 4: 92 (Abstract). **Schwenke, W.**—(See Lepidoptera.) **Shoumatoff, N.**—Some statistical concepts in taxonomy. [85] 6: 64–66. **Smith, M. V. and G. F. Townsend.**—A method of measuring pollinator populations on field crops. [43] 84: 314–316, ill. **Stark, R. W.**—Analysis of a population sampling method for the lodgepole needle miner in Canadian Rocky Mountain parks. [43] 84: 316–321. **Suomalainen, E.**—Harry Federley (1879–1951). [85] 6: 57–60. (Obit., port., bibl.) **Swenson, L. E.**—Cleaning skeletal material with meal worms. [Jr. Col.-Wyo. Acad. Sci.] 4: 103. (Abstract.) **Taylor, L. F., J. W. Apple and K. C. Berger.**—(See Anatomy.) **Vandoni, C.**—Augusto Molinar (1896–1952). [Natura, Milan] 43: 39–44. (Obit., port.) **Z., E.**—Karl Escherich, 1871–1951. [Graellsia] 8: 113–115, 1950. (Obit., port.)

ANATOMY, PHYSIOLOGY, MEDICAL—**Applegarth, A. G.**—(See Arachnida.) **Audy, J. R.**—(See Arachnida.) **Barnes, H. F.**—Studies of fluctuations in insect populations. XII. [77] 39: 370–73. *Id.* XIII. *Ibid.* 374–78. **Bartlett, B. R. and J. C. Ortega.**—(See General.) **Beall, G.**—(See Lepidoptera.) **Benson, A.**—Distribution of certain riffle insects in a foothills stream with respect to current velocity. [Jr. Col.-Wyo. Acad. Sci.] 4: 93–94 (Abstract). **Brian, A. D.**—(See Hymenoptera.) **Bruneau de Miré, P.**—(See Orthoptera.) **Campbell, W. V. and R. E. Hutchins.**—(See General.) **Clark, A. M. and C. J. Mitchell.**—Effects of x-rays upon haploid and diploid embryos of Habrobracon.

[30] 103: 107–177. **Cumber, R. A.**—(See Hemiptera.) **Dethier, V. G.**—Adaptation to chemical stimulation of the tarsal receptors of the blowfly. [30] 103: 178–89. **Floch, H. and E. Abonnenc.**—(See Diptera.) **Flores, H.**—(See Lepidoptera.) **Fraser, F. C.**—Methods of exophytic oviposition in Odonata. [60] 88: 261–262. **Fritsch, H.**—Versuch zur Analyse des Angriffspunktes kontaktinsektizider Stoffe. [Biol. Zentralbl.] 71: 512–28. **Gisin, G.**—(See Smaller orders.) **Goodwin, T. W.**—The biochemistry of locust pigmentation. [Biol. Reviews] 27: 439–460, ill. **Grindley, D. N.**—The composition of the body fat of small green chironomids. [77] 29: 440–44. **Haas, A.**—Die Mandibledrüse als Duftorgan bei einigen Hymenopteren. [100] 39: 484. **Helwig, E. R.**—(See Orthoptera.) **Herold, W.**—Beobachtungen über die Arbeitsleistung einiger Arbeiter von Vespa germanica F.—Dolichovespula germanica (F.) (Hym., Vespidae). [Biol. Zentralbl.] 71: 461–69. **Howe, R. W.**—Miscellaneous experiments with grain weevils. [Resistance of adults to starvation.] [60] 88: 252–255. **Hrob, H.**—Entwicklungsphysiologische Untersuchungen an den Speicheldrüsen, dem Darmtraktus und den Imaginalscheiben einer Letalrasse (lgl) von Drosophila melanogaster. [Z. Vererbungslehre] 84: 320–60. **Hughes, G. M.**—Differential effects of direct current on insect ganglia. [77] 29: 387–401. **Illies, J.**—(See Smaller orders.) **Jekot, C. B.**—Lethal mutations produced in Drosophila melanogaster by the auxin, gamma-indole-3-n-butyric acid. [Jr. Col.-Wyo. Acad. Sci.] 4: 100 (Abstract). **Jones, G. D. G.**—The responses of the honey bee to repellent chemicals. [77] 29: 372–86. **Kéler, S. v.**—Ueber die Wachstums-Progression bei Pseudomenopon rowanae Keler. (Mallophaga). [28] 2: 113–19. **Lippert, W. und K. Gentil.**—Elektronenmikroscopische Studien über micellare Strukturen bei Schmetterlingsschuppen vom Morpho-Typ. [Z. Wiss. Mikroscop.] 61: 95–100. **Lloyd, D. C.**—(See Hemiptera.) **Longanecker, D. S. and A. L. Burroughs.**—Sylvatic plague studies. IX. Studies of the microclimate of the California ground squirrel burrow and its relation to seasonal changes in the flea population. [50] 33: 488–499, ill. **Lüscher, M.**—Untersuchungen über das individuelle Wachstum bei der Termite Kalotermes flavicollis Fabr. (Ein Beitrag zum Kastenbildungsproblem.) [Biol. Zentralbl.] 71: 529–43. **McLeod, J. H. and D. A. Chant.**—(See Orthoptera). **Pellegrino, J.**—Observações sôbre a resistência do Triatoma infestans ao

jejum. [117] 12: 317–20. **Pendergrast, J. G.**—(See Hemiptera.) **Pipkin, S. B.**—Seasonal fluctuations in Drosophila populations at different altitudes in the Lebanon Mountains. [Z. Vererbungslehre] 84: 270–305. **Pschorn-Walcher, H.**—(See Arachnida.) **Richards, A. G.**—Studies in arthropod cuticle. VIII. The antennal cuticle of honeybees, with particular reference to the sense plates. [30] 103: 201–25. **Rietschel, P.**—Ueber Beinautotomie bei der Blattlaus Drepanosiphon (Hemip.). [Biol. Zentralbl.] 71: 544–50, ill. **Riha, G.**—(See Arachnida.) **Sacktor, B. and D. Bodenstein.**—Cytochrome C oxidase activity of various tissues of the American cockroach Periplaneta americana (L.). [75] 40: 157–61. **Sarles, M. P. and W. B. Vandergrift.**—Chronic oral toxicity and related studies on animals with the insecticide and pyrethrum synergist piperonyl butoxide. [10] 1: 862–83. **Shaw, S.**—(See Coleoptera.) **Shull, E. M.**—Migration of Catopsilia butterflies in India. [85] 6: 68–69. **Smith, C. N., M. M. Cole, G. W. Lloyd and A. Selhime.**—Mosquito-repellent mixtures. [76] 45: 805–809. **Taylor, L. F., J. W. Apple and K. C. Berger.**—Response of certain insects to plants grown on varying fertility levels. [76] 45: 843–848. **Vallentyne, J. R.**—Insect removal of nitrogen and phosphorus compounds from lakes. [50] 33: 573–577. **Willis, E. R. and L. M. Roth.**—Reactions of Aedes aegypti (L.) to carbon dioxide. [78] 121: 149–80. **Wilson, C. and Ralph L. Davis.**—Insect problems that develop on alfalfa following treatment with certain insecticides. [106] 52: 343–348. **Woodroffe, G. E.**—(See Hemiptera.)

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[56] 54: 153–169, ill. (*). **Jeekel, C. A. W.**—Scolopendridae (Chilopoda) from Surinam. [57] 14, no. 329, p. 175. **Levitt, V.**—Line fishing for moths (by spiders). [Aust. Mus. Mag.] 10: 361–365, ill. **Pschorn-Walcher, H.**—Zur biologie und systematik terricoler milben (I) Die ostalpinen arten der gattung Liacarus Mich. (Oribatei). [34] 2: 177–182, ill., 1951 (*K). **Riha, G.**—Zur ökologie der oribatiden in kalksteinböden (Acarina). [158] 80: 407–450, ill., 1951. **Stahnke, H. L.**—Some scorpion anomalies. [Jr. Col.-Wyo. Sci.] 4: 104 (Abstract). **Strandtmann, R. W.**—The mesostigmatic nasal mites of birds. III. New species of Rhinoecius from owls (Acarina, Rhinonyssidae). [56] 54: 205–214, ill. **Viets, K.**—Nachträge zu "Die meeresmilben (Halacaridae, Acari) der fauna Antarctica." [Further zool. results, Swedish Antarctic Exped., 1901–1903] 4, no. 10, 11 pp., ill. (*).

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FLEAS, FLUKES, AND CUCKOOS. A study of bird parasites. By Miriam Rothschild and Theresa Clay. xiv + 304 pp., 99 black and white photographs, 4 maps and 22 drawings. The Philosophical Library, Inc., New York 16, N. Y. 1952. Price $8.75.

This is an outstanding book dealing with the natural history of the parasites of birds. It is written by an authority on bird fleas and an authority on the feather lice, but includes an account of all bird parasites: insects, mites, worms, microorganisms, and the skuas and cuckoos. The first part is a splendid general account of commensalism, symbiosis and parasitism, with many striking examples that whet the appetite for the chapters on the special groups. Amazingly, these special chapters are even more fascinating, and the many strange and often incredible facts on every page leave the reader with never a dull moment. Not only are the facts themselves intrinsically exciting but the crisp presentation, figures of speech, and excellent literary style are such as to provide pleasurable reading. Ornithologists will be amazed and captivated, along with entomologists and parasitologists and zoologists generally, for the book will be most enjoyed by those with some background in natural history. There is a good index of popular and scientific names.—R. G. SCHMIEDER.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

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ENTOMOLOGICAL NEWS

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Thomas Say's Home at New Harmony, Indiana

By Harry B. Weiss

Each of the first four numbers of Entomological News for 1895, contains a brief paper by Professor F. M. Webster dealing with the visit that he made to New Harmony during the winter of 1888, at which time he was a guest of "the late Col. and Mrs. Richard Owen" both of whom lived in New Harmony and knew Thomas Say during the nine years (1826–1834) that he lived there. During Webster's visit Col. Owen, who was close to ninety years old, and his wife showed him many places with which Thomas Say was associated. Webster's papers are illustrated by photographs and the one in the February, 1895 News shows "Say's Home at New Harmony," before he moved into the Maclure house where he died Oct. 10, 1834. In the March News, the Maclure house is illustrated and it is stated that at one time this property "seems to have been transferred to Mr. and Mrs. Say, probably by either Alexander or William Maclure, and later sold by the Says to David Dale Owen."

In "Thomas Say, Early American Naturalist" (1931), both of these photographs were reproduced together with an additional one entitled "Rappite House, Number 5, New Harmony, Indiana. Said to have been the home of Thomas Say in 1829–1830," that was supplied by Professor J. Speed Rogers and Dr. Charles P. Alexander who had obtained it during a visit to New Harmony.

A little over seven years after the appearance of "Thomas Say, Early American Naturalist" or on March 9, 1938, I received a letter from Miss M. E. Fauntleroy of New Harmony saying that she was shocked to find, in that book, a picture of

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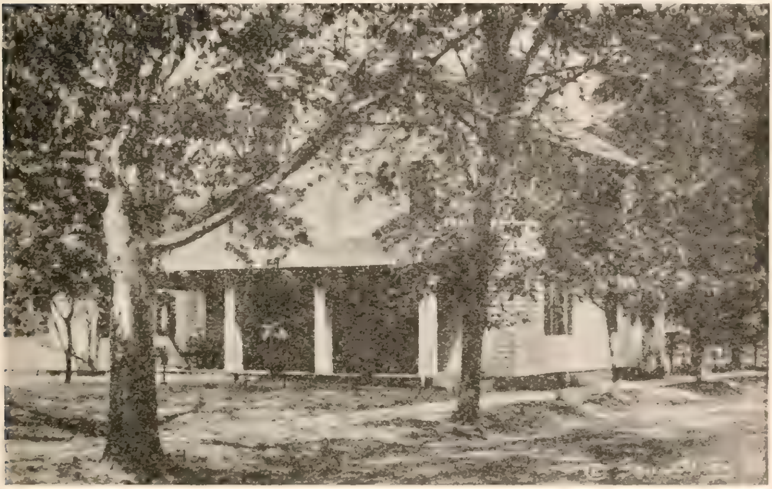
the old Schnee home labelled as a former home of Thomas Say. When the book had appeared in 1931 she had gone to Mrs. Nora C. Fretageot, librarian of the Workingman's Institute at New Harmony, and demanded an explanation for advising me that the old Schnee house had been occupied by Thomas Say. No explanation was forthcoming. As a matter of fact the photograph and caption were supplied to me by Professor J. Speed Rogers and not by Mrs. Fretageot.

In subsequent letters received from Miss M. E. Fauntleroy during March, 1938, at which time Miss Fauntleroy was eighty years of age and Mrs. Fretageot had died about a year previously, it is claimed that Mr. and Mrs. Say lived in the Old Fauntleroy Home. An aunt, of Miss Fauntleroy, who lived to be ninety-four often spoke of her association with the Says while they were living in No. 53, as it was known during the early times. A Dr. Murphy who came to New Harmony during the regime of the Rappites lived in the Old Fauntleroy Home for seven years during his old age and he too spoke to Miss Fauntleroy of the Says living in No. 53 and of their removal from No. 53 to Maclure's home, which burned in 1843. When George B. Lockwood's "The New Harmony Communities" appeared in 1902, it referred to the Old Fauntleroy Home as the home of Thomas Say. According to Miss Fauntleroy, Mr. and Mrs. Say lived in No. 53 soon if not directly after they were married and Cornelius Tiebout and his daughter Caroline lived with them. Later, they moved to No. 5 (the old home of George Rapp, built in 1815) that was burned in 1843.

From this it would appear that the following changes should be made in the illustrations in "Thomas Say, Early American Naturalist." The illustration facing page 40 which Miss Fauntleroy called the Schnee house and which was copied from Webster should be replaced by the illustration of the Old Fauntleroy Home, that accompanies these notes. The photograph facing page 146 of Rappite House No. 5 should be captioned as follows, "Rappite House No. 5, the old home of George Rapp and later of William Maclure. This was partly destroyed by fire in 1843 and then rebuilt with architectural changes. Thomas

Say died in this house." The photograph facing page 158 should be captioned, "The Maclure residence in New Harmony after being rebuilt following a fire in 1843."

A printed leaf sent to me by Miss Fauntleroy states that the Old Fauntleroy Home built by the Rappites in 1815 had been the dwelling place of Franz Phfiel, a Rappite and his family. Following them it was the home of Thomas Say and his wife; Cornelius Tiebout, engraver, and his daughter Caroline Tiebout; Oliver Evans, Jr., an inventor and his wife; Louisa Neef, a Pestalozzian teacher; Robert Henry Fauntleroy, an officer of the Southern Coast and Geodetic Survey, and his wife; Jane Dale Owen, daughter of Robert Owen; Constance Owen Fauntleroy, founder of "The Minerva Society"; Prof. Geo. Davidson, a scientist, and his wife; Ellinor Fauntleroy; Dr. David Dale Owen, first U. S. Geologist, and his wife; Caroline Neef, a Pestalozzian teacher; Robert Dale Owen, statesman, author, diplomat, and his wife; Mary Jane Robinson; and Rachel Homer Fauntleroy.



The Old Fauntleroy Home in New Harmony, Indiana. Built by the Rappites in 1815. Purchased in 1841 by Robert Henry Fauntleroy and remodeled. Thomas Say and his wife lived in this house.

In 1841 Robert Henry Fauntleroy purchased the property and remodeled it. After that it remained in the family and was known as the Old Fauntleroy Home. In 1938 it was owned by the Indiana Federation of Clubs and Miss M. E. Fauntleroy was its hostess.

It is difficult to believe that Col. and Mrs. Richard Owen, both of whom knew Say, could have misinformed Webster when he visited them in 1888. However over a period of 55 or 60 years memories may become dim. It is also not perfectly clear why Miss M. E. Fauntleroy waited seven years or until one year after the death of Mrs. Nora C. Fretageot to advise me of the error, unless it was because there was a long standing feud between these two women over the historical importance of the Old Fauntleroy Home and of Mme. Marie Louise Duclos Fretageot, who joined the New Harmony community and managed William Maclure's affairs there during his absences. Miss Fauntleroy was not an admirer of Mme. Marie Duclos Fretageot and Mrs. Nora C. Fretageot was not impressed by Miss Fauntleroy's claims for the Old Fauntleroy Home.

My failure to correct the mistake, if mistake it is, until 15 years after the receipt of Miss Fauntleroy's letters may be easily explained. The correspondence was put away so carefully that it remained "lost" until recently when it was found.

The Trichodectid of the Hog-nosed Skunk, Conopatus leuconotus Lichtenstein (Mallophaga: Trichodectidae)[1]

By Edwin F. Cook, University of Minnesota

The following new species of *Neotrichodectes* was collected by Dr. James R. Beer of the University of Minnesota Museum of Natural History Expedition to Mexico in December 1951 from a single specimen of *Conopatus leuconotus* Lichtenstein.[2] This specimen was found to be very heavily infested with all stages of the mallophagan. Fresh material was collected in alcohol at the time of capture of the host, and additional specimens were removed from the skin after it was brought back to the University.

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[1] Paper No. 2876, Scientific Journal Series, Minnesota Agricultural Experiment Station, St. Paul 1, Minnesota.

[2] Identified by Dr. James R. Beer, University of Minnesota.

Neotrichodectes spatulatus n. sp.

This species closely resembles *N. chilensis* Werneck and *N. arizonae* Werneck, but the female differs in the structure of the gonopophyses and in the chaetotaxy of the pregenital sclerite, while the male differs in the wider sclerotization of the basal plate.

FEMALE: (Figures 1 and 3D)[3]

Total length 1.72 mm., width at the widest part of the abdomen .93 mm., rather short and stout. The length of the female paratypes varies from 1.50 to 1.75 mm. with an average length of 1.62 mm. Head wider than long; length .46 mm., width .62 mm., the anterior margin gently rounded with a broad shallow median notch leading into the hair groove; temples not salient and without notably large setae. The rather short antennae are set in small fossae, are three-segmented and beset with setae as in the illustration; segment one is the largest in diameter and segment three the longest. The eyes are small but obvious.

The thorax is short and wide but rather narrower than the head. The prothoracic tergum is divided medially into two lateral tergites each of which bears at its lateral margin a single stout seta and medially, on the posterior margin, a somewhat longer but more delicate seta. Medially, between the two prothoracic tergites and the posterior margin of the head there is a small fusiform sclerite which may be the true tergum. The thoracic spiracles are located immediately ventrad of the lateral margins of the tergites just posterior to the prothoracic legs. The tergum of the pterothorax is deeply emarginate posteriorly and expanded laterally into prominent wing-like lobes. These lobes bear three short, stout, marginal setae and a long, posteriorly directed medial seta.

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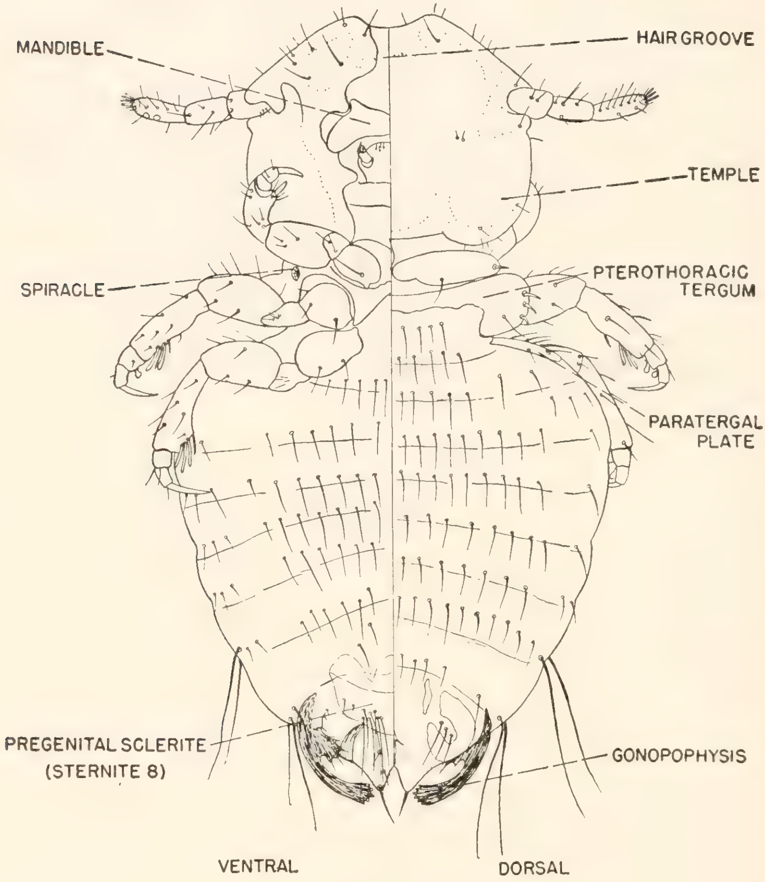
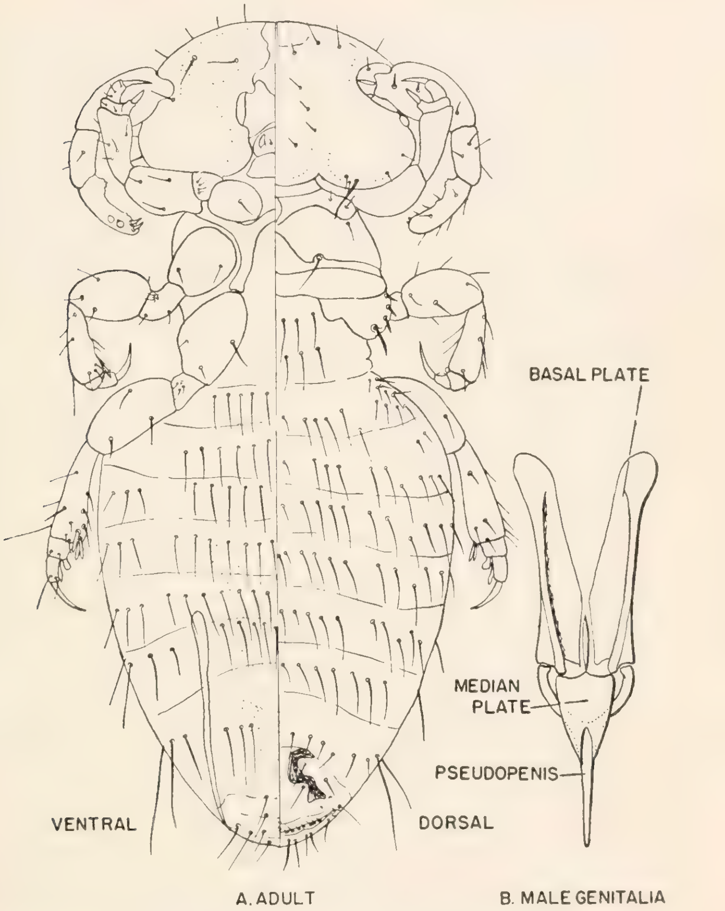
[3] The figures were drawn with the air of a microprojector, and the chaetotaxy is as nearly identical with that of the specimen figured as possible.

The legs are without noteworthy features.



NEOTRICHODECTES SPATULATUS N.SP. FEMALE FIGURE I

The abdomen is somewhat pyriform, narrowed posteriorly, nearly as wide as long, almost entirely membranous. Only the paratergal plates of abdominal segment one and parts of the eighth segment are sclerotized. The spiracles are vestigial, visible only as minute dorsolateral punctures on abdominal segments one to six. This is at variance with the statement by Werneck (1948) that the abdominal spiracles are completely lacking in *Neotrichodectes.* The abdomen terminates in a pair of prominent cones, each bearing a stout seta at its apex.



NEOTRICHODECTES SPATULATUS N.SP. MALE FIGURE 2

The gonopophyses arise from segment eight (Fig. 3D), each gonopophysis with a large serrate inner lobe, several of the serrations tipped with a small seta; apex of the gonopophysis expanded, spatulate and apically irregularly serrate. The sternite of segment eight is rather lunate and bears a cluster of long setae on each side of the midline; the tergite with a pair of laterally located, "C"-shaped sclerotizations, each surrounding three stout setae.

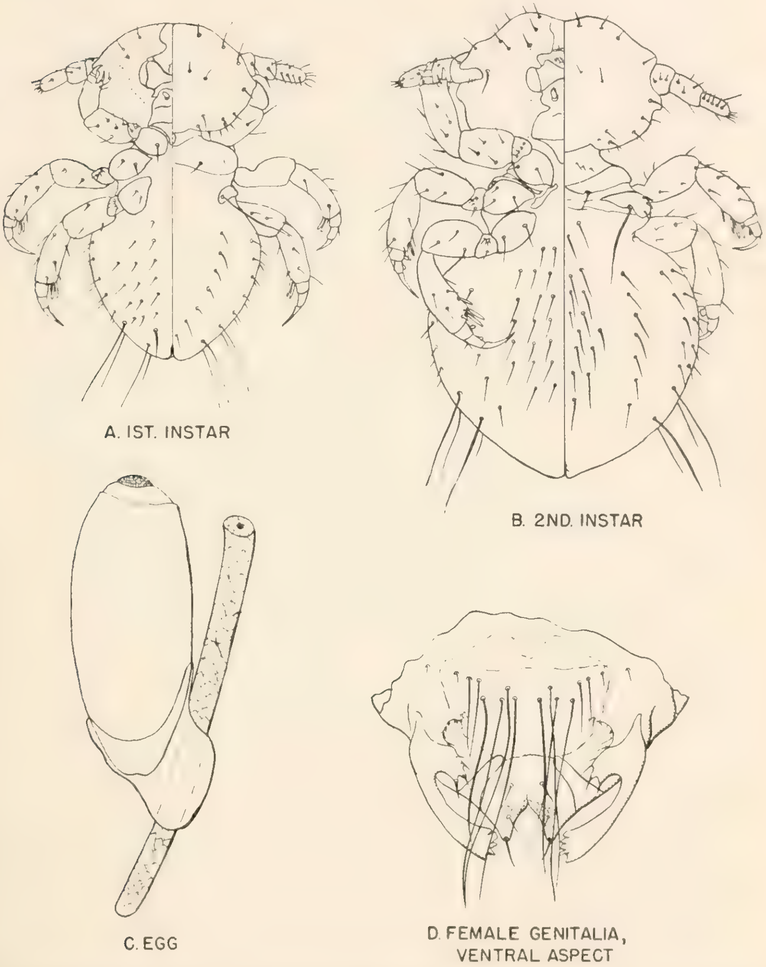
The female of this species is separable from *N. arizonae* and *N. chilensis* by the spatulate, apically serrate gonopophyses, by the lunate eighth sternite and by the presence of the paired clusters of seven long setae on each side of the midline of sternite eight. Compare with illustrations of Werneck (1948, Fig. 184 to 188).

MALE: (Figures 2A and B)

Total length 1.75 mm., width at widest part of the abdomen .71 mm., longer and more slender than the female. The length of the male paratypes varies from 1.56 to 1.75 mm., with an average length of 1.68 mm. The head is wider than long; length .37 mm., width .53 mm.; the anterior margin almost completely rounded with little evidence of any median notch; antennal fossae larger than in the female; temporal lobes smaller but more rounded and prominent than in the female, each lobe with a conspicuous seta postero-dorsally. The antennae are modified for clasping the female; segment one much enlarged and femora-shaped, segment two rather small, segment three with the inner face tuberculate and a pair of short stout apical setae.

The thorax and appendages are as in the female; chaetotaxy similar.

The abdomen is longer and more slender than in the female, largely membranous and with no evidence of paratergal plates. Spiracles as in the female. The subgenital phragma with the lateral margins strongly sclerotized, thus appearing as a pair of parallel sclerotizations on the ventral surface of the abdomen from segment five to the opening of the genital chamber. The posterior margin of the genital opening is sclerotized and beset with short setae. Dorsally, the apparent eighth segment bears a question-mark-shaped sclerite on either side of the midline.


A. IST. INSTAR

B. 2ND. INSTAR

C. EGG

D. FEMALE GENITALIA, VENTRAL ASPECT

N.SPATULATUS N.SP. EGG, NYMPHS & FEMALE GENITALIA FIGURE 3

The male genitalia are much as in *N. arizonae* Werneck (1948, Fig. 189). The pseudopenis or fused endomeres are in the form of a long-stemmed "Y" and the median plate (fused parameres?) is almost identical with that illustrated by Werneck. The greatest difference between males of this species and of *N. arizonae, N. chilensis* and *N. interrupto-fasciatus* lies in the much wider lateral sclerotizations of the basal plate.

TYPE HOST: *Conopatus leuconotus* Lichtenstein, M.M.N.H. No. 3224, collected in tropical evergreen forest at the edge of Rio Cajones (Rio San Marcos), Rancho el Ajengibre, Km. 264, Mexico City-Tuxpan Highway, Puebla, MEXICO, December [14], 1951. Col. Dwain W. Warner.

SPECIMENS EXAMINED: *holotype* female, *allotype* male, 19 female and 8 male paratypes and 24 nymphs representing the three nymphal instars. All specimens are in the collections of the University of Minnesota.

NOTES ON THE IMMATURE STAGES

EGGS: (Figure 3C)

Length .50 to .62 mm.; glued to the hairs near the base, between the shoulders and along the sides of the host just posterior to the forelegs. The surface of the eggs smooth with no cuticular sculpturing that can be detected. Much like the eggs of *Trichodectes canis* (DeGeer) (Crystal, 1949) except for the smaller size.

FIRST INSTAR NYMPH: (Figure 3A)

Length .60 to .71 mm.; head and thorax together as long as the abdomen; setae fewer than adult, only a single longitudinal row on each side dorsally (one seta on each side of the midline per segment), a triple row ventrally and a double row laterally; legs with fewer setae than in adult; pterothorax with a single pair of long setae.

SECOND INSTAR NYMPH: (Figure 3B)

Length .89 to 1.15 mm.; abdomen relatively larger than in the first instar and with more setae on each segment; head and antennae much as in the adult female; no evidence of genitalia.

THIRD INSTAR NYMPH: (not illustrated)

Length 1.32 to 1.41 mm.; head and thorax much as in the adult female but less heavily sclerotized. Seta number intermediate between that of the second instar and the adult female; no evidence of the external genitalia. Crystal (1949) indicates that in *T. canis* (DeGeer) the external genitalia do not appear until the final moult. The number of nymphal instars in that species is identical with the one herein described.

Werneck (1948) indicates that it is difficult to separate the males of *N. interupto-fasciatus* (from *Taxidia taxus*), *N. chilensis* (from *Conopatus chinga, C. humboldti* and *C. chilensis amazonicus*), *N. arizonae* (from *Conopatus mesoleucus*) and *N. mephitidis* (from various species of *Mephitis*). He also indicates that he hesitates in considering the various species of *Neotrichodectes* described from the genus *Conopatus* (including *N. wolffhügeli* Werneck from *Conopatus chinga*) as good distinct species because the differences in the females are very small. However, the differences in the females are distinct and constant even though small, and these differences correlate (except in the case of *N. wolffhügeli*) with differences in hosts. There is little reason then, to doubt that these various species of *Neotrichodectes* are good (again with the exception of *N. wolffhügeli*). It is, furthermore, interesting to note that there is a different species of Trichodectid on each of the two species of *Conopatus* of Central and North America while a third and possibly a fourth species occurs on the several South American species of the genus.

LITERATURE CITED

CRYSTAL, M. M. 1949. A descriptive study of the life history stages of the dog biting louse, *Trichodectes canis* (DeGeer). Bull. Brook. Ent. Soc. 44: 89–97.

WERNECK, F. L. 1948. Os malophagos de mamiferos, Parte I: Amblycera e Ischnocera. Edicaõ da Revista Brasileira de Biologia, Rio de Janeiro. pp. 1 to 243.

A Check List of the Trichoptera (Caddis Flies) of New Hampshire

By Wallace J. Morse and Robert L. Blickle [1, 2]

This report sets forth the results of six years (1946–1951) collecting with light traps. The traps were operated in ten different towns. However, over 75 per cent of the material taken in the traps was from the towns of Durham and Lee, in the southeastern part of the state. The number of specimens taken in the light traps totaled over 15,000, not including many unknown specimens.

The list of Trichoptera, as given, contains published records and collection records by methods other than by light traps. The list is a record of adult specimens.

Much credit must be given to Dr. Lorus J. Milne for the use of his unpublished doctorate thesis in which he compiled all known North American Trichoptera distributional records up until 1936. Further appreciation is expressed to Dr. Cornelius Betten, Dr. Herbert H. Ross, and Dr. Donald G. Denning, for their cooperation and help in identifying and checking many of the light trap specimens.

The following abbreviations are used in connection with literature records:

Nathan Banks, NB; Cornelius Betten, CB; Donald G. Denning, DGD; Lorus J. Milne, LJM; Herbert H. Ross, HHR. Collectors: Robert L. Blickle, RLB; James G. Conklin, JGC; Wallace J. Morse, WJM; Philip R. Lowry, PRL; H. F. Sheffield, HFS; David Laddey, DL; Carl F. French, CFF; light trap, lt.

The dates listed indicate the first and last date on which specimens were taken.

The list of Trichoptera is arranged in the same manner as used by Ross (1944).

Future collecting and the identification of undertermined species should bring the list total to nearly three hundred species.

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[1] N. H. Agr. Expr. Sta.

[2] Scientific Contribution No. 147.

Nearly half of the unknowns on hand are in the family Hydroptilidae.

A List of New Hampshire Trichoptera

RHYACOPHILIDAE

Rhyacophila Pictet

acropedes Banks, Mt. Washington (DGD), July 31–Aug. 4; **atrata** Banks, Mt. Washington (DGD), July 31–Aug. 4; **banksi** Ross, Mt. Washington (DGD), Warren, Woodstock (DGD, HHR), June 21–July 4; **carolina** Banks, Mt. Washington (DGD), Durham, Lee (lt), July 4–30; **carpenteri** Milne, Mt. Washington (LJM, DGD), Franconia, Gorham, Randolph (LJM), June 30–Aug. 4; **fuscula** (Walker), White Mountains (LJM), Durham, Lee (lt), June 15–Sept. 14; **glaberrima** Ulmer, Mt. Washington (LJM), July 31–Aug. 15; **minora** Banks, White Mountains (LJM, CB), Colebrook (WJM, RLB), June 19; **torva** Hagen, White Mountains (LJM, RLB), June 4–July.

Glossosoma Curtis

***americanum** Banks, Franconia (LJM, CB); **nigrior** Banks, Lee, Plymouth (lt), May 8–July 26.

Agapetus Curtis

iridis Ross, Lee, Plymouth (lt), June 1–July 3; **pinatus** Ross, Hopkinton, Lee (lt), June 27–July 10; **rossi** Denning, Durham, Lee, Plymouth, Rumney (lt), June 5–Aug. 30.

Protoptila Banks

maculata (Hagen), Newport (lt), July 8; **palina** Ross, Hopkinton, Durham, Lee, Plymouth (lt), June 9–July 14.

PHILOPOTAMIDAE

Dolophilodes Ulmer

distinctus (Walker), Mt. Washington (LJM), Durham, Lee, N. Conway, Plymouth (lt), April 25–Aug. 25.

Wormaldia McLachlan

moesta (Banks), Bow (lt), Colebrook (WJM, RLB), Durham, Lee (lt), June 19–July 6; **shawnee** Ross, Lee (lt), June 18–30.

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* Unidentified female, may be the same as *G. nigrior.*

Chimarra Stephens

aterrima Hagen, Berlin, Franconia (LJM), Durham (WJM; lt), Freedom, Hopkinton, Lee, N. Conway, Rumney (lt), May 18–Aug. 30; **obscura** (Walker), Milford (LJM), Durham (WJM, RLB; lt), Hopkinton, Lee (lt), May 29–Sept. 3; **socia** Hagen, Bow, Durham, Lee (lt), June 9–July 28.

PSYCHOMYIIDAE

Phylocentropus Banks

carolinus Carpenter, Durham, Lee (lt), June 22–July 30; **lucidus** (Hagen), N. Conway, Squam Lake (LJM), Durham, Hopkinton, Lee, Newport, Plymouth, Rumney (lt), May 8–Aug. 30; **placidus** (Banks), Bow, Durham, Freedom, Hopkinton, Lee (lt), Northwood (JGC), Plymouth, Rumney (lt), May 8–Sept. 7.

Neureclipsis McLachlin

bimaculatus (Linnaeus), Durham, Freedom, Plymouth (lt), June 16–July 26; **crepuscularis** (Walker), Durham, Lee (lt), June 18–Aug. 30.

Polycentropus Curtis

albipunctus (Banks), Durham (WJM; lt), Lee (RLB, lt), June 15–Sept. 28; **aureolus** (Banks), Hampton (CB, HHR), Bow, Durham, Hopkinton (lt), Lee (RLB; lt), Plymouth (lt), June 10–Aug. 6; **cinereus** Hagen, Dublin, Gorham, Milford, Pinkham Notch, Squam Lake (LJM), Bow (lt), Durham (WJM; lt), Freedom, Hopkinton (lt), Lee (RLB; lt), Plymouth (lt), June 2–Sept. 10; **confusus** Hagen, Franconia, Pinkham Notch (LJM), Durham, Hopkinton, Lee (lt), June 14–Aug. 30; **crassicornis** Walker, Hampton, Squam Lake (LJM), Bow, Durham, Freedom, Hopkinton (lt), Lee (RLB; lt), Plymouth (lt), Rye (RLB), June 10–Aug. 24; **flavus** (Banks), Bow, Durham, Freedom, Hopkinton, Lee, Plymouth, Rumney (lt), June 1–Aug. 30; **grellus** (Milne), Durham, Lee (lt), July 10–19; **interruptus** (Banks), Hampton, Squam Lake (LJM), Durham, Lee, Plymouth, Rumney (lt), Rye (RLB), June 9–Aug. 30; **maculatus** Banks, Mt. Washington (HHR), Lee, Plymouth (lt), July 15–Aug. 6; **nascotius** Ross, Durham, Lee (lt), June 18–Aug. 31; **pentus** Ross, Mt. Washington (HHR), June 22; **pixi** Ross, N. Woodstock (HHR), June; **remotus** Banks, N. Woodstock (HHR), Durham (RLB; lt), Hopkinton, Lee, Plymouth, Rumney (lt), Rye (RLB), May 5–Sept. 7; **smithae** Denning, Mt. Washington (DGD), July 17.

Nyctiophylax Brauer

uncus Ross, Woodstock (HHR), Durham, Freedom, Lee, Plymouth (lt), June 16–July 25; **vestitus** (Hagen), Dublin, Milford, Squam Lake (LJM), Barrington (WJM), Bow (lt), Durham (WJM; lt), Freedom, Hopkinton, Lee, Newport (lt), Northwood (JGC), Plymouth, Rumney (lt), June 2–Sept. 7.

Cernotina Ross

pallida (Banks), Freedom, Hopkinton (lt), July 6–10; **spicata** Ross, Durham (WJM; lt), Lee (lt), June 5–Aug. 27.

Lype McLachlin

diversa (Banks), N. Woodstock (HHR), Durham, Freedom, Lee, Plymouth, Rumney (lt), May 8–Aug. 30.

Psychomyia Pictet

flavida Hagen, N. Woodstock (HHR), Durham, Lee, N. Conway, Plymouth, Rumney (lt), June 9–Aug. 30.

Hydropsychidae

Parapsyche Betten

apicalis (Banks), Franconia (CB), Mt. Washington, Randolph (LJM), June 22–30.

Arctopsyche McLachlen

ladogensis (Kolenati), White Mountains (LJM), June.

Diplectrona Westwood

doringa Milne, White Mountains (LJM), July 3; **modesta** Banks, Etna (HHR), Lee (lt), July 8.

Hydropsyche Pictet

alternans (Walker), Franconia, Pinkham Notch (LJM), July 26; **betteni** Ross, Bow, Durham, Lee, Plymouth (lt), May 8–Sept. 10; **bifida** Banks, Durham, Hopkinton, Lee (lt), June 5–Sept. 6; **dicantha** Ross, Hopkinton (lt), July 10–30; **morosa** Hagen, Durham (lt), Aug. 18–25; **slossonae** Banks, Franconia (LJM, DGD), Durham (lt), July 28; **sparna** Ross, Durham (RLB; lt), Hopkinton (lt), Lee (RLB; lt), N. Conway, Plymouth (lt), May 8–Sept. 1; **vexa** Ross, Plymouth (lt), June 9; **walkeri** Betten & Mosley, Durham, Plymouth (lt), June 24.

Cheumatopsyche Wallengren

analis (Banks), Durham (HHR; lt), Freedom (lt), Hanover (WJM), Hopkinton (lt), Lee (RLB), Plymouth, Rumney (lt), June 9–Sept. 7; **campyla** Ross, Bow, Durham, Hopkinton, Lee, Newport, Plymouth (lt), Strafford (WJM), June 5–Aug. 28; **minuscula** (Banks), Durham (lt), Lee (RLB; lt), Newport (lt), June 22–Aug. 13; **oxa** Ross, Colebrook (WJM, RLB), June 19; **pasella** Ross, Lee, Plymouth (lt), June 9–Aug. 7.

Macronemum Burmeister

zebratum (Hagen), Durham (WJM; lt), Lee, Plymouth (lt), June 15–Aug. 31.

Hydroptilidae

Agraylea Curtis

multipunctata Curtis, Durham, Hopkinton, Lee (lt), May 8–Aug. 26.

Ithytrichia Eaton

clavata Morton, Durham, Hopkinton, Lee (lt), June 5–Aug. 8.

Stactobiella Martynov

delira (Ross), Colebrook (WJM, RLB), Durham, Lancaster, Lee, Plymouth (lt), May 31–Aug. 13; **palmata** (Ross), Bow, Durham, Lee, Plymouth (lt), June 1–July 4.

Ochrotrichia Mosley

shawnee (Ross), Plymouth (lt), June 9–10.

Oxyethira Eaton

forcipata Mosely, Bow, Durham, Lancaster, Lee, Plymouth (lt), May 8–Sept. 10; **grisea** Betten, Durham, Hopkinton, Lee, Plymouth (lt), May 8–Aug. 28; **pallida** (Banks), Durham, Lee, Plymouth (lt), June 18–Sept. 10; **serrata** Ross, Bow, Durham, Hopkinton, Lee, Plymouth (lt), May 8–Sept. 23; **zeronia** Ross, Bow, Lee (lt), July 4–Aug. 5.

Orthotrichia Eaton

americana Banks, Durham, Hopkinton, Lee, Plymouth (lt), June 16–Aug. 13; **cristata** Morton, Bow, Durham, Hopkinton, Lee, Plymouth, Rumney (lt), June 5–Aug. 28.

Hydroptila Dalman

amoena Ross, Lee (lt), Aug. 25; **callia** Denning, Durham, Hopkinton, Lee (lt), May 31–July 28; **gunda** Milne, Durham, Lee (lt), June 18–Aug. 4; **hamata** Morton, Bow, Durham, Lee, Newport (lt), June 18–Aug. 28.

Neotrichia Morton
vibrans Ross, Lee, Plymouth, Rumney (lt), June 24–Aug. 24.

PHRYGANEIDAE

Agrypnia Curtis
improba var. **sackeni** Banks, Franconia, White Mountains (NB); **vestita** (Walker), Hampton (LJM), Rye (RLB), June 16.

Oligostomis Kolenati
ocelligera (Walker), Dublin, Franconia (LJM), NH (Hagen's type) (CB), Durham (RLB, HFS, DL), Lee (RLB), May 3–21.

Eubasilissa Martynov
paradalis (Walker), Franconia, White Mountains (LJM, CB).

(*To be continued*)

Notes and News in Entomology

Under this heading we present, from time to time, notes, news, and comments. Contributions from readers are earnestly solicited and will be acknowledged when used.

Some Notes on the Role of Epidermis in Insects and Ticks

Within recent years a number of isolated observations have indicated a degree of importance to the epidermis not previously suspected. The first surprising development came when LEES [1] was reporting on the hygroscopic uptake of water in ticks, that is, on the absorption of water vapor from moist air to increase the amount of fluid water in the animal (a phenomenon also known in certain grasshoppers, fleas, beetles, bedbugs and moth pupae). He found that injuries to the cuticle extensive enough to require repair were accompanied by cessation of the uptake of atmospheric water. Perhaps this means that the power to absorb and concentrate water vapor is a property of the living epidermis, and that when the epidermis has to stop to repair damage it has to cease, temporarily, the active absorption of water. Presumably the water absorption requires expenditure of energy (it does not occur in killed specimens), and the epidermis does not expend energy for both repair and absorption simultaneously. Alternatively, more than the epidermis is involved, and an injury needing repair affects the whole organism or at least the epidermis plus endocrine system as may be indicated by the next set of data.

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[1] LEES, A. D. Disc. Faraday Soc., no. 3, pp. 187–192. 1948.

In pupae of the giant silkworm moths (cecropia, promethia, etc.), WILLIAMS [2, 3] has shown that an abdominal shell of integument from which all internal organs have been removed can complete development to a normal-appearing adult abdomen provided that the appropriate endocrine glands are implanted into it. In other words, the pupal epidermis plus its associated somatic musculature is fully capable of forming the adult skin and scales except for needing whatever is supplied by the hormones. Perhaps the hormones supply only a stimulus to develop, perhaps they supply some necessary chemicals for the development (Williams has shown that the hormones influence re-establishment of the cytochrome enzyme system but whether or not these particular enzymes play an important direct role in differentiation of the integument is unknown). Whatever the endocrines supply, this plus the epidermis is adequate for adult development—innervation and the presence of more muscles and other internal organs are needed to make a complete moth but not to make a complete moth's skin. The integument is thus shown to be an amazingly competent and independent organ system.

Surgical operations such as are needed for obtaining the preceding data automatically involve injury comparable to the injury referred to in the first paragraph. Perhaps it is not surprising, then, that differentiation of an isolated abdominal integument does not proceed until after healing of the wounds.[3] In other words, healing comes first whenever the injury is extensive and takes precedence over phenomena such as water absorption and differentiation (metamorphosis).

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[2] WILLIAMS, C. M. Biol. Bull., 93: 89–98. 1947.

[3] WILLIAMS, C. M. Growth Symp., 12: 61–74. 1948.

More recently, SUSSMAN [4] found in the course of injection experiments that perforation of the integument of a cecropia pupa by a hypodermic needle caused an immediate jump in oxygen consumption (30%) and that the increased rate was maintained for several days. It is not known whether this great increase in respiration is due to the whole animal or to the integument alone. Be that as it may, obviously a small injury to the integument can call forth a large and lasting response expressed as an altered metabolic rate. However, this particular response does not seem to be a general phenomenon because no such increased oxygen consumption was found in fly larvae (*Phormia*) injected by BUCK, KEISTER, and POSNER [5] or in beemoth pupae (*Galleria*) injected by Mr. JOHN HERON in this laboratory.[6]

Older and therefore more generally known is the fact that specific pattern determination is at least largely under control of the individual epidermal cells. It was shown many years ago that the entire cuticle is capable of being sclerotized, and, accordingly, that the sclerotization pattern must be somehow controlled by the immediately underlying epidermal cells.[7] Recently it has been shown that this control is accomplished by the local passing out into the cuticle of substrate for sclerotization only in those areas that are to be sclerotized.[8, 9] In wound healing the nature of the regenerating integument has also been shown to be controlled by the nature of the cells that are doing the healing.[10] In effect, these data simply push the basic developmental problem back one step; namely, to the question of why certain epidermal cells become determined to do one thing in development while nearby cells become determined to do something else. On this problem little progress has been made but the importance of the individual epidermal cells in the process seems apparent.

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[4] SUSSMAN, A. S. Biol. Bull., 102: 39–47. 1952.

[5] BUCK, J. B., M. L. KEISTER, and I. POSNER. Ann. Entomol. Soc. Amer., 45: 369–384. 1952.

[6] HERON, J. Unpublished thesis, Univ. Minnesota. 1949.

[7] RICHARDS, A. G. The Integument of Arthropods. Univ. Minnesota Press. 1951.

[8] RICHARDS, A. G. Biol. Bull., 103: 201–225. 1952.

[9] DENNELL, R. and MALEK. Nature (in press).

[10] WIGGLESWORTH, V. B. J. Exp. Biol., 14: 364–381. 1937.

No novelty is involved in saying that the integument is an important organ system of insects and other arthropods. Obviously it conditions most exchanges with the environment (notably water loss), and mosaics and gynandromorphs long since demonstrated that there must be a large degree of autonomy in its development. Novel are the facts that the epidermis can condition such seemingly over-all processes as oxygen consumption and the hygroscopic uptake of water, that wound healing takes precedence over the uptake of water and over differentiation, and that the individual cells of the general epidermis have so much individuality.

A. GLENN RICHARDS.

Current Entomological Literature

Compiled by VENIA T. PHILLIPS, Librarian

Academy of Natural Sciences of Philadelphia

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania pertaining to entomology, including all arthropods except Crustacea. Coverage will be world-wide as regards major contributions to systematics as well as for all papers on morphology, physiology, embryology, etc. In addition, for species from the Americas and the Pacific (Nearctic, Neotropical and Polynesian regions) all minor contributions to taxonomy, distribution, etc., will also be recorded.

This list gives references of the year 1952 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

GENERAL—Aellen, V.—La faune de la grotte de Moron (Jura Suisse). [Bull. Soc. Neuchatel. Sci. Nat.] 75: 139–51, ill. **Barnes, W. B.**—Zoogeographic regions of Indiana. [12] 48: 694–99, map. **Bishopp, F. C., H. H. Stage and H. Sollers.**—World wide mosquito work in 1951. [Proc. N. Y. Mosq. Ext. Assn.] 1952: 8–34. **Bogush, P. P.**—Primenenie svetovykh samolovob kak metod izucheniia dinamiki chislennosti nasekomykh. [Ent. Obozrenie] 31: 609–28, ill., 1951. **Bruns, H.**—Die rote waldameise im einsatz gegen forstschädlinge (Formicidae). [Kosmos] 48: 563–67, ill. Warn- und tarntrachten im tierreich. 76 pp., ill., Kosmos, Stuttgart. **Chisholm, A. H.**—Strange relations of birds and insects. [Nature Mag.] 45: 526–28, 550, ill. **Conci, C.**—Le Arene Candide N. 34 Li. Morfologia e fauna. (Cave fauna.) [Doriana] 1, no. 24, 12 pp. **Dehalu, M. and J. Leclercq.**—Application des series logarithmiques de Fisher-Williams à la classification des hymenoptères crabroniens. [Ann. Soc. Roy. Zool. Belg.] 82: 67–82, 1951. **D'Erasmo, G.**—Le date di pubblicazione della "Fauna del Regno di Napoli" di Oronzio Gabriele Costa e di Achille Costa. [Rend. Accad. Sci. Fisiche e Mat.] ser. 4, v. 16: 14–36, 1949. **Fenton, F. A. and R. G. Dahms.**—Attempts at controlling the greenbug by the importation and release of lady beetles in Oklahoma. [Proc. Okla. Acad. Sci.] 32: 49–51. **Freeman, T. N.**—Some problems of insect biology in the Canadian Arctic. [Arctic] 5: 175–77. **Howell, D. E.**—Museum insect pest control with newer insecticides. [Proc. Okla. Acad. Sci.] 32: 31–3, 1951. **Kullenberg, B.**—Recherches sur la biologie florale des Ophrys. [Bull. Soc. d'Hist. Nat. l'Afrique du Nord] 43: 53–63. (Orchid that mimics bee.) **Nissen, C.**—Dr. Friedrich Ohaus (1864–1946); a bibliography of his entomological papers. [J. Soc. Bibl. Nat. Hist.] 2: 400–6. **Philip, C. B.**—Notes on tabanid flies and other victims caught by the carnivorous plant, Sarracenia flava. [64] 35: 151–55. **Rothschild, M. and T. Clay.**—Fleas, flukes and cuckoos. Philosophical Library, N. Y. $8.75. xiv, 304 pp., ill. (Rev. by G. S. Tullock in [36] 47: 137.) **Smith, H. M.**—Definition of species. [Turtox News] 30: 110–12.

BIOGRAPHIES, OBITUARIES—Kinnmark, Folke, 1899–1951.—(Obit. with port.), by C. H. Lindroth in [108] 17: 105–6. **Krogerus, Rolf.**—(Biogr. with port.), by C. H. Lindroth in [108] 17: 98–99. **Nordström, Frithiof.**—(Biogr. and port.), by K. Ander in [108] 17: 97. **Sjöstedt, Yngve, 1866–1948.**—(Obit. with port.), by R. Malaise in [108] 17: 103–4. **Tragardh, Ivar, 1878–1951.**—(Obit. with port.), by O. Ahlberg in [108] 17: 100–2. **Zakhvitkin, Alekseĭ Alekseevich, 1906–1951.**—(Obit. with bibl. and port.), by E. N. Pavlovskii in [Ent. Obozrenie] 31: 629–33, 1951.

ANATOMY, PHYSIOLOGY, MEDICAL—Baker, W. K. and C. W. Edington.—The induction of translocations and recessive lethals in Drosophila under various oxygen concentrations. [Genetics] 37: 665–77. **Berger, L. A.**—Remarques sur le dimorphisme saisonnier des lepidopteres du Congo Belge. [Ann. Soc. Roy. Zool. Belg.] 82: 19–22, 1951. **Chumakova-Safronovich, B. M.**—Vliianie pitaniia na sozrevanie nasekomykh. [Ent. Obozrenie] 31: 336–48, ill., 1951. **Danielevskiĭ, A. S.**—Ob usloviiakh mnogoletneĭ diapauzy u cheshuekrylykh (Coccidae). [Ent. Obozrenie] 31: 386–92, 1951. **DeFalco, R. V.**—Serological identification of mosquito blood meals. [Proc. N. J. Mosq. Ext. Assn.] 1952: 168–69. **Defretin, R.**—Présence possible de polysaccharides au niveau des dictyosomes dans la glande salivaire de la larve de chironome. [Compt. rend. Soc. Biol. Paris] 146: 1118–19. **Defretin, R.**—Sur la sécrétion salivaire de la larve de chironome et quelques réactions combinées des polysaccharides. Présence de phosphatase alcaline. [Compt. rend. Soc. Biol. Paris] 146: 1115–17. **Dobzhansky, T., B. and N. Spassky.**—A comparative study of mutation rates in two ecologically diverse species of Drosophila. [Genetics] 37: 650–64. **Edel'man, N. M.**—Vliianie nizkikh temperatur na zhukov iz semeĭstva chernotelok (Tenebrionidae). [Ent. Obozrenie] 31: 374–85, 1951. **Gaul, A. T.**—Additions to vespine biology X: Foraging and chemotaxis. [36] 47: 138–40. **Kozhanchikov, I. V.**—Pishchevaia spetsializatsiia i znachenie ee v zhizni nasekomykh. [Ent. Obozrenie] 31: 323–35, 1951. **Lucker, J. I. and M. P. Sause.**—The occurrence of demodectic mites, Demodex folliculorum, in the internal tissues and organs of the dog. [N. Amer. Veterinarian] 33: 787–96, ill. **McClelland, R. B. and F. E. McClelland, Jr.**—Pneumonyssus caninum in a dog in Western New York (Acarina). [Cornell Vet.] 42: 337–38, ill. **Mercer, E. H. and M. F. Day.**—The fine structure of the peritrophic membranes of certain insects. [30] 103: 384–94, ill. **Peacock, A. D.**—Some problems of parthenogenesis. [Advancement of Sci.] 9: 134–48. **Power, M. E.**—A quantitative study of the growth of the central nervous system of a holometabolous insect, Drosophila melanogaster. [79] 91: 389–411. **Proctor, N. K.**—The effects of calcium on isolated arthropod muscles. [30] 103: 421–32. **Reeves, W. C. and W. McD. Hammon.**—California encephalitis virus, a newly described agent. III. Mosquito infection and transmission. [J. Immunology] 69: 511–14. **Rizki, M. T. M.**—Ontogenetic distribution of genetic lethality in Drosophila. [78] 121: 327–50. **Shapiro, I. D.**—Pol' pitaiushchikh rasteniĭ v biologii krestotsvetnykh klopov roda Eurydema Lap. (Pentatomidae). [Ent. Obozrenie] 31: 361–73, ill, 1951. **Shteinberg, D. M.**—Morfogeneticheskie osnovy raschlenennosti konechnosteĭ nasekomykh. [Ent. Obozrenie] 31: 450–62, ill., 1951. **Tamino, G.**—Osservazioni sulle caratteristiche aerodinamiche dei ditteri e sul volo degli insetti. [Arch. Zool. Ital.] 36: 217–51, ill., 1951. **Tropin, I. V.**—Kormovye rasteniia i morfologicheskaia kharakteristika sosnovogo klopa Aradus cinnamomeus Panz. [Ent. Obozrenie] 31: 349–60, ill., 1951. **Zumpt, F.**—Milben in der haut des menschen (Acarina). [Mikrokosmos] 42: 35–8, ill.

ARACHNIDA AND MYRIOPODA—Alfeev, N. I.—Ob izmeniaemosti metamorfoza u iksodobykh kleshcheĭ (Acarina). [Ent. Obozrenie] 31: 398–403, 1951. **Braun, R.**—"Maserung" von wänden durch spinnen. [Natur u. Volk] 82: 230–3, ill. **Conci, C.**—(See General.) **Crowell, R. M.**—New records of rheophilic water-mites from northwestern North Carolina (Acarina). [Jr. Elisha Mitchell Sci. Soc.] 68: 191–94, ill. **Haarløv, N.**—Systematics and ecology of the genus: Tectocepheus Berlese 1896 (Acarina). [Ent. Meddel.] 26: 424–37, ill. **Hammer, M.**—A new oribatid (Acarina) from Rocky Mountains. [Ent. Meddel.] 26: 380–83, ill. **Lipovsky, L. J.**—A new genus and species of chigger mite (Acarina, Trombiculidae). [82] 25: 132–37, ill. **Lucker and Sause.**—(See Anatomy.) **Meyer, J.**—Édification de galles multiples par une même fondatrice et peuplement des galles d'Eriophyes macrorhynchus Nal. sur Acer Pseudoplatanus L. [2] 235: 1428–40. **Mihelčič, F.**—Beitrag zur systematik der tardigraden. [Arch. Zool. Ital.] 36: 57–103, ill., 1951 (*k). **Roewer, C. F.**—Neotropische Arachnida Arthrogastra, zumeist aus Peru. [Senckenbergiana] 33: 37–58, ill. **Shustrov, A. K.**—O reaktsii kleshcheĭ Ornithodorus lahorensis Neum. i Argas persicus F.-W. na nekotorye faktory vneshneĭ credy (Acarina). [Ent. Obozrenie] 31: 393–97, 1951. **Sorokin, S. V.**—Pochva poleĭ kak biotop khlebnykh kleshcheĭ (Acarina, Tyroglyphoidea). [Ent. Obozrenie] 31: 411–15, 1951. **Toledo Piza, Jr., S. de.**—Primeiras observações sôbre os crommôsomios do Tityus metuendus Pocock (Scorp., Buth.). [Scientia Genetica, Torino] 4: 162–67 (Engl. summary). **Tuzet, O., J.-F. Manier and M. Vogeli-Zuber.**—Sur quelques parasites intestinaux de Mardonium piceus Attems 1952, Myriapode-Diplopode de Daloa (Côte d'Ivoire). [Bull. Inst. Franc. d'Afr. Noire] 14: 1143–51, ill. **Zumpt, F.**—(See Anatomy.)

SMALLER ORDERS—Levanidova, I. M.—Lichinki Calamoceratidae (Trichoptera) dal'nego vostoka SSSR. [Ent. Obozrenie] 31: 529–37, ill., 1951. **Ratcliffe, F. N., F. J. Gay and T. Greaves.**—Australian termites; the biology, recognition, and economic importance of the common species. 124 pp. Melbourne: Commonwealth Sci. and Ind. Research Organ. **Santis, L. de.**—Tres tisanópteros nuevos de la República Argentina. [Notas Museo La Plata] 15: sect. zool. no. 133: 59–70, ill., 1950. **Schmidt, E.**—Fang und aufzucht der larve von Boyeria irene (Fonsc.) (Odon., Aeschnidae). [108] 17: 187–92, ill. **Tapia, E. A.**—Dos especies de tisanopteros Argentinos nuevos para la ciencia. [132] 154: 107–10, ill.

ORTHOPTERA—Beaudry, J. R.—Additions à la faune orthoptérologique de la province de Québec ou du Canada. [Annales de L'ACFAS] 15: 100–2. **Colombo, G.**—Brachitterismo in Anacridium aegyptium. [Arch. Zool. Ital.] 36: 355–62, ill., 1951. Ulteriori osservazioni sulla biologia e sulla genetica dell "Anacridium aegyptium" L. [Atti Accad. Naz. Lincei] ser. 8, 12: 203–7. **Griffiths, J. T.**—Some biological notes on katydids in Florida citrus groves. [64] 35: 134–38, ill. **Pasquier, R., X. Colonna-Césari and J. Bonfils.**—Sur la détermination des régions grégarigènes du criquet marocain Dociostaurus maroccanus Thünbg., en Corse. [2] 235: 1157–59. **Rehn, J. A. G.**—The grasshoppers and locusts (Acridoidea) of Australia. Vol. I, Tetrigidae and Eumastacidae. 326 pp., 21 pls. Melbourne: Commonw. Sci. & Ind. Res. Organization. **Roth, L. M.**—The tergal gland of the male cockroach, Supella supellectilium. [79] 91: 469–74, ill. **Singh, B.**—Observation on the biology of the cricket, Gymnogryllus humeralis Walker (Gryllidae) in the Dehra Dun insectary. [J. Zool. Soc. India] 4: 47–61, ill. **Strohecker, H. F.**—Descriptions of new species and notes on North American Orthoptera. [12] 48: 683–88, ill. **Toledo Piza, Jr., S. de.**—Número e comportamento dos cromôssomios em alguns ortópteros do Brasil. [Scientia Genetica, Torino] 4: 191–98 (Engl. summary).

HEMIPTERA—Boratynski, K. L.—Matsucoccus pini (Green, 1925) (Coccoidea: Margarodidae): Bionomics and external anatomy with reference to the variability of some taxonomic characters. [126] 103: 285–326, ill. (k). **Bozhko, M. P.**—K sravnitel'nomu izucheniiu tleĭ (Aphidodea) opushek listvennykh lesov polezashchitnykh polos. [Ent. Obozrenie] 31: 404–10, 1951. **Danilevskii, A. S.**—(See Anatomy.) **Drake, C. J. and H. C. Chapman.**—A new species of Micracanthia from Florida (Saldidae). [64] 35: 147–50. **Drake, C. J. and G. B. Viado.**—Saldoidea of the Philippines (Leptopodidae and Saldidae). [Philippine J. Sci.] 80: 339–42. **Ellis, L. L.**—The aquatic Hemiptera of southeastern Louisiana (exclusive of the Corixidae). [12] 48: 302–29, map (k). **Knowlton, G. F.**—Bedbugs in swallow nests. [36] 47: 122. **Porter, T. W.**—A new species of Hebridae from the Southwest. [82] 25: 147–49, ill. **Roonwal, M. L.**—The natural establishment and dispersal of an imported insect in India.—The Lantana bug, Teleonemia scrupulose Stal (= lantanae Distant; Tingidae), with a description of its egg, nymphs and adult. [J. Zool. Soc. India] 4: 1–16, ill. **Ruppel, R. F. and D. M. DeLong.**—New species of Idona from Mexico (Cicadell.). [Lloydia] 15: 188–92. **Shapiro, I. D.**—(See Anatomy.) **Tropin, I. V.**—(See Anatomy.) **Wittlake, E. B. and R. H. Beamer.**—A new Hebecephalus (Cicadellidae). [82] 25: 154–56, ill.

LEPIDOPTERA—Berger, L. A.—(See Anatomy.) **Franclemont, J. G.**—Four undescribed moths from western North America, with notes on closely related species (Phalaenidae Olim. Noctuidae). [36] 47: 123–37, ill. **Franz, E.**—Typen und typoide des Natur-Museums Senckenberg, 5: Papilionidae. [Senckenbergiana] 33: 23–36. **Hackray, J.**—Les anomalies des élevages (Notodontidae). [84] 52: 57–8. **Harz, K.**—Wanderschmetterlinge und ihre erforschung. [Natur u. Volk] 82: 236–37. **Janmoulle, E.**—Note sur les moeurs des lépidoptères (Pieridae). [84] 52: 57. **McElvare, R. R.**—Schinia saturata Grote. [36] 47: 140. **Nielsen, A. and E. T.**—Migrations of the pieride butterfly Ascia monuste L. in Florida. [Ent. Meddel.] 26: 386–91, ill. **Overlaet, F. G.**—La "Curiosité" chez les papillons (Satyridae). [84] 52: 55–6. **Pierce, F. N.**—The female genitalia of the Noctuidae. 2d ed. 1952. E. W. Classey, 91 Bedford Lane, Feltham, England. (Rev. by L. A. Berger in [84] 52: 60.) **Riabox, M. A.**—Osnovyne morfologicheskie osobennosti zemlianykh podgryzaiushchikh sovok (Agrotidae). [Ent. Obozrenie] 31: 474–84, ill., 1951. **Shvanvich, B. N.**—Opyty nad lokalizatsieĭ risunka kryla u cheshuekrylykh. [Ent. Obozrenie] 31: 485–94, ill., 1951. **Vinogradova, V. N.**—Osobennosti zhilkovaniia zadnego kryla v semeĭstve Pyralidae. [Ent. Obozrenie] 31: 495–99, ill., 1951.

DIPTERA—Alexander, C. P.—New or insufficiently-known crane-flies from Chile (Tipulidae). [Agricultura tecnica, Santiago] 11: 99–118, ill. **Baker and Edington.**—

(See Anatomy.) **Bishopp, et al.**—(See General.) **Blickle, R. L.**—Notes on the mosquitoes (Culicinae) of New Hampshire. [Proc. N. J. Mosq. Ext. Assn.] 1952: 198–202. **Carpenter, S. J. and E. L. Peyton.**—Mosquito studies in the Panama Canal Zone during 1949 and 1950 (Culicidae). [12] 48: 673–82. **DeFalco, R. J.**—(See General.) **Defretin, R.**—(See Anatomy.) **Dobzhansky, Spassky and Spassky.**—(See Anatomy.) **Frick, K. E.**—The status of Agromyza illinoensis Malloch, 1934, and its correct generic position (Agromyzidae). [82] 25: 150–54, ill. **Grunin, K. I.**—O proiskhozhdenii roda Rhinoestrus Br. (Oestridae). [Ent. Obozrenie] 31: 467–73, ill., 1951 (*). Stroenie perednikh dykhalets lickinok ovodov. (Oestridae, Hypodermatidae, Gastrophilidae). [Ent. Obozrenie] 31: 463–66, ill., 1951. **Hagmann, L. E.**—Mansonia perturbans—recent studies in New Jersey. [Proc. N. J. Mosq. Ext. Assn.] 1952: 60–5, ill. **Hansens, E. J.**—Some observations on the abundance of salt marsh greenheads. [Proc. N. J. Mosq. Ext. Assn.] 1952: 93–8. **Huckett, H. C.**—Males of the genus Hylemya sens. Lat. from North America, having dorsal bristles on mid metatarsus, with descriptions of new species (Muscidae). [36] 47: 113–22 (k). **James, M. T.**—The genera Epideisticus, Afrodontomyia, and Cyrtopus (Stratiomyidae). [82] 25: 125–29 (*k). **Pfadt, R. E.**—Seasonal development of cattle grubs in Wyoming. [82] 25: 137–43. **Philip, C. B.**—(See General.) **Power, M. E.**—(See Anatomy.) **Smith, M. E.**—Immature stages of the marine fly, Hypocharassus pruinosus Wh., with a review of the biology of immature Dolichopodidae. [12] 48: 421–32. **Tamino, G.**—(See Anatomy.) **Wirth, W. W.**—Notes on marine midges from the eastern United States (Tendipedidae [= Chironomidae]). [Bull. Marine Sci. Gulf & Caribbean] 2: 307–12, ill.

COLEOPTERA—Brüll, H.—Über die bedeutung der mundwerkzeuge des männlichen und des weiblichen hirschkäfers (Lucanidae). [Natur und Volk] 82: 289–94, ill. **Conci, C.**—(See General.) **Dillon, L. S.**—The Meloidae of Texas. [12] 48: 330–420, ill. (*k). **Edel'man, N. M.**—(See Anatomy.) **Edgren, R. A.**—A bifurcated antenna in the soldier beetle, Chauliognathus pennsylvanicus (Cantharidae). [97] 114: 3 pp. **Fenton and Dahms.**—(See General.) **Franciscolo, M.**—Sulla posizione sistematica delle Glipa americane ed africane (Mordellidae). [Doriana] 1, no. 23, 8 pp., ill. **Gressitt, J. L.**—The tortoise beetles of China

(Chrysomelidae: Cassidinae). [Proc. Cal. Acad. Sci.] ser. 4, v. 27: 433–591, ill. (*k). **Jolivet, P.**—Remarques préliminaires sur l'écologie de Timarcha balearica Gory (Chrysomelidae). [136] 88: 138–40. **Mulnard, J.**—La spermatogenese double d'Acanthoscelides obtectus Say (Bruchidae). [Ann. Soc. Roy. Zool. Belg.] 82: 399–445, ill. **Ochs, G.**—Gyrinidae aus El Salvador. [Senckenbergiana] 33: 147–50, ill. (*k). **Robert, F. A.**—Contribution à l'étude du comportement du Neoclytus acuminatus (Fab.) et de son parasite, l'Heliconidea ligator (Say). [Annales de l'ACFAS] 15: 102–5. **Ruschel, G.**—Nuevos Curculionidae de Bolivia y Perú. II. Notas a algunas especies de Brèthes. [Revista Museo La Plata, Argentina] 6: Sect. Zool. no. 38: 69–116, ill., 1950. **Schedl, K. E.**—Fauna Philippinensis, VIII. Contribution to the morphology and taxonomy of the Scolytoides. [Philippine J. Sci.] 80: 363–71, ill. (*k). **Selander, R. B.**—New species of Meloidae from Utah. [82] 25: 130–32, ill. **Steel, W. O.**—A note on the habits of Velleius dilatatus (F.) (Staphylinidae). [60] 88: 278. **Straneo, S. L.**—Nuovi Pterostichini (Carabidae). [Doriana] 1; no. 8: 1–8 (S). **Uhmann, E.**—Austral-Asiatische Hispinae, VIII, Callispini. [Phil. J. Sci.] 80: 343–63, ill. (*k). **Young, F. N.**—A new species of Suphisellus from Florida (Noteridae). [64] 35: 157–58.

HYMENOPTERA—Bruns, H.—(See General.) **Dehalu and Leclercq.**—(See General.) **Gaul, A. T.**—(See Anatomy.) **Kullenberg, B.**—(See General.) **Neubecker, F.**—"Ameisen-Rauchsäulen." [Natur u. Volk] 82: 233–35, ill. **Pardi, L.**—Studio della attività e della divisione di lavoro in una società di Polistes gallicus (L.) dopo la comparsa delle operaie. [Arch. Zool. Ital.] 36: 363–431, ill., 1951. **Pasteels, J.**—Sur l'existence de races geographiques chez Tenthredo arcuata Förster. [Ann. Soc. Roy. Zool. Belgique] 82: 341–52, ill. **Robert, F. A.**—(See Coleoptera). **Rozen, J. G.**—A new species of Nomadopsis (Andrenidae). [82] 25: 144–47, ill. **Rubtsov, I. A.**—Afitis (Aphytis chrysomphali Mercet)—Parazit korichnevoĭ shchitovki; nekotorye osobennosti rasprostraneniia i biologii korichnevoĭ shchitovki. [Ent. Obozrenie] 31: 435–49, ill., 1951. **Vazirani, T. G.**—A new host record for the hymenopterous parasite Melcha ornatipennis Cameron (Ichneumonidae). [J. Zool. Soc. India] 4: 101. **Wheeler, G. C. and J.**—The ant larvae of the subfamily Ponerinae, Pt. II. [12] 48: 604–72, ill. (k).

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

American Sarcophagidae—wanted for identification. H. R. Dodge, P.O. Box 185, Chamblee, Georgia.

German lepidopterist wishes to correspond and receive live material (eggs and pupae) in exchange for dried imagoes. Johannes Reichel, Koenigsberg, Krs. Wetzlar 16, Germany.

For exchange—The periodic Cicada, T. septendecim. Desire Lepid., espec. Papil., Sphing. & Speyeria. Also Col., espec. Ceramb. & Lucan. John W. Morris, 2704 Genesee St., Syracuse 9, N. Y.

Cynipid and Itonidid galls—American species wanted; purchase or exchange for British species. Fresh or dried. D. Leatherdale, F.R.E.S., Old Woodstock, Oxford, England.

Wanted—Reprints or papers concerning insects taken in Alaska for inclusion in list of Alaskan insects. R. H. Washburn, Alaska Experiment Station, Palmer, Alaska.

Conopidae of the World wanted. Will pay 10¢ to $1.00 for pinned and labelled specimens. S. Camras, 4407 N. Milwaukee Ave., Chicago 30, Illinois.

Anisoptera—Nearctic sp. wanted for exchange, espec. Ophiog., Arigom., Aeschna, Neurocor., Somatoc., Cordulia, Dorocor., Leucor. R. D. Cuyler, N. C. State College, Raleigh, N. C.

Bembicini and Stizini (Hym., Sphec.) of New World wanted for revis. study. Will return upon request or at end of project. James E. Gillaspy, Dept. of Zoology, Univ. Texas, Austin 12, Texas.

Parasitic Mites Wanted

Many, thick, well-fed parasitic mites from Spring Odonata and from other aquatic insects from all parts of the World. They must be removed from their hosts without injury, placed in well-dampened cotton in a glass vial (a separate vial for each host insect), packed in cotton in a metal mailing tube and sent by airmail to Dr. Paul Münchberg, (21b) Soest, Windmuhlenweg 93, Germany. Place date, locality and name of host in each vial. Correspondence in English and German.

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APRIL 1953

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Henry Torsey Fernald

ENTOMOLOGICAL NEWS

Vol. LXIV APRIL, 1953 No. 4

Henry Torsey Fernald (1866–1952) [1]

The death of Doctor Henry Torsey Leroy Fernald has removed from the lists one of the few remaining members of the 'Old Guard' of entomology in America. Doctor Fernald was born on April 17, 1866, at Litchfield, Maine, the son of two outstanding entomologists. His father, Professor Charles Henry Fernald (1838–1921), was an authority on various groups of Microlepidoptera, while his mother, Maria Elizabeth (Smith) Fernald (1839–1919), was similarly known for her studies on the scale insects, particularly for her 'Catalogue of the Coccidae of the World.' His boyhood and early manhood was spent in Orono, Maine, where his father was on the staff of the Maine State College (now the University of Maine). Many of his summers were spent on Mount Desert Island, at the birthplace of his father on Fernald Point, near Southwest Harbor. The parents were active in collecting the insects of this part of Maine and it was natural that the youth should participate in these activities and gradually become interested in the science to which he later devoted his life. He received the B.S. degree from Maine in 1885, the M.S. in 1888. He then entered Johns Hopkins University, receiving the Ph.D. degree in 1890. On June 9 of this same year he was married to Miss Minna R. Simon, of Baltimore, who survives. Throughout their long wedded life of more than sixty years, Mrs. Fernald was a loyal helpmate whose kindly interest and sympathy with his work undoubtedly has proved his greatest possible inspiration. Three children were born to this union: Helen Elizabeth (Professor at the Royal

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[1] The frontispiece, for which the News is indebted to Miss Helen E. Fernald, shows Dr. Fernald at 83 years of age. Ed.

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Ontario Museum of Archaeology, Toronto, authority on Chinese art); Charles Henry(who was Professor of Business Administration at the University of Arkansas at the time of his death in 1942); and Ruth Louise (Mrs. Carl B. Stone, of Cincinnati, Ohio).

Doctor Fernald's first position was that of Professor of Zoology at the Pennsylvania State College from 1890 to 1899, where he functioned as State Entomologist, and, during the last year, as State Zoologist. In June 1899 he was called to the Massachusetts Agricultural College (now the University of Massachusetts) as Professor of Entomology in the newly established Department of Entomology. His father never held this title, having been Professor of Zoology. Doctor Fernald held his Professorship and Head of the Department for thirty-one years, retiring in 1930 because of ill health. At this time he moved permanently to Florida, first residing in Orlando, in 1938 moving to Winter Park, where he built a beautiful home at 1128 Oxford Road. Here he spent his remaining days and died on the morning of July 15, 1952, following several increasingly serious attacks of angina. He was buried in Palm Cemetery, Winter Park, beneath the palms and live oaks.

Virtually all honors possible in his chosen field came to him during his lifetime. In the American Association of Economic Entomologists, which he joined as a young man, he became president in 1914, and at the time of his decease was one of only two Honorary Members (the other being Professor Herbert Osborn who still survives). In the Entomological Society of America, he was a charter member, became a Fellow in 1914, and was chosen an Honorary Fellow in 1939. He presented the Annual Address before the 22nd meeting of the Society at Nashville, Tennessee, on December 27, 1927, speaking on the subject "Insects, the People and the State." He was a member of the Honorary Societies of Phi Beta Kappa and Phi Kappa Phi.

On January 14, 1925, the Fernald Entomological Club was founded at the University of Massachusetts and was named in honor of Doctor Fernald. Following his retirement in 1930 he prepared an account of the work of the Department, under the general title "The History of Entomology at the Massachusetts Agricultural College 1867–1930," which was issued in mimeograph form in 1938 and serves as a basic account of the founding and early work of the Department. Since 1932 the Fernald Club has sponsored an annual publication, likewise in mimeographed form, entitled the "Fernald Club Yearbook" which continues this record of the work of the department, staff, students, and alumni.

In 1921 the McGraw-Hill Company published the first edition of his "Applied Entomology," followed by later editions in 1926 and 1935. For the fourth edition (1942) Doctor Fernald chose as co-author one of his former students, Doctor Harold H. Shepard, who is now engaged in the preparation of a revised fifth edition. This very important college text in entomology was widely accepted and thousands of copies have been sold in this country and abroad.

Doctor Fernald's fields of investigation and research included life-history studies of various insects, the burning of foliage by arsenicals, and, in the field of insect taxonomy, important studies on the Sphecid wasps, upon which group he published various papers, particularly on the species of the New World. In 1913 he went to Europe where he visited many of the leading museums and studied the various types of Sphecidae described by earlier workers. Near the close of his active career he presented his important collection of these wasps to the United States National Museum. His manuscript notes on the various types in the European museums are in the possession of Doctor V. S. L. Pate.

Doctor Fernald's breadth of knowledge in entomology and zoology and his ability to impart this to his students combined to make him one of the outstanding teachers of entomology in America. He, together with his father, belonged to a school that insisted on breadth of learning in his pupils and from his earliest days at Amherst adhered to the principle of the so-called tripartite thesis for candidates working toward the higher degrees. This included separate studies on insect morphology, taxonomy, and biology, together with additional work on the methods of control in the case of injurious species. That such a policy was sound seems to be shown by the unusually high calibre of his students, many of whom became prominent in commercial work, in the Federal service, as State entomologists, and as teachers in colleges and universities.

Following his retirement from active duties at the relatively early age of 64, Doctor Fernald continued in correspondence with many of his former friends and students. That there was no decrease in the affection and respect for their beloved teacher and friend was strikingly shown on the occasion of his eightieth birthday, in 1946, when hundreds of letters, cards, and telegrams, expressing their love and appreciation, poured in from former students in this country and abroad.

Mrs. Alexander and I owe a vast debt of gratitude to Doctor and Mrs. Fernald. When we first arrived in Amherst in late August 1922, they insisted that we stay at their home until we could find a house and get settled. We can never forget the hospitality shown us at that time and constantly thereafter. Despite his busy and exacting life, Doctor Fernald insisted upon accompanying us in our work of house hunting, and in every possible way made our introduction to the town and to the department a most happy and auspicious one.

Doctor Fernald's life personified kindliness, patience, and understanding. His own sterling integrity and uprightness made him demand comparable characteristics in others, and he had an uncanny ability to evaluate these qualities. His manner was invariably dignified and courtly. All of these many attributes were briefly summarized at the end by a friend who called him "God's true gentleman." His profound love for his home and for his family, and his deep loyalty to his friends, were endearing qualities. We who were so fortunate as to have known him and to have been associated with him, will always remember Doctor Fernald as a great teacher, a perfect gentleman, and a true friend.

CHARLES P. ALEXANDER

Glow-worms in a Marine Littoral Habitat in Jamaica (Coleoptera; Lampyridae) *

By Frank A. McDermott, Wilmington, Delaware

In February 1952, during a study of the *Lampyridae* of Jamaica, the larvae of an unidentified species were found crawling on wet rocks at the edge of the sea at Whitehouse Bay on the south coast. These rocks were coral limestone, much corroded and pitted, affording a very treacherous foothold; they were so situated that at high tide the sea-water splashed over them, while at ebb tide they were merely kept wet by the spray. Three species of snails were abundant on the rocks; these snails were kindly identified for me by Dr. C. Bernard Lewis, Director and Curator of the Museum of the Institute of Jamaica, as *Littorina ziczac, Nerita peloronta,* and *Tectarius tuberculatus.* One of the glow-worms was found half-way inside the shell of a snail of the latter species, presumably feeding on the snail. The glow-worms were 9 to 11 mm. long, greyish dorsally and white or yellow ventrally, of the general shape and appearance of the larvae of *Photinus,* and with the usual ventral luminous organs on the 8th abdominal segment. It was not possible to determine the species. A few adults of *Photinus commissus* E. Oliv. and of *P. synchronans* Barber were in flight in the vicinity, and the color and size of the glow-worms suggest that they may be the larvae of the former. Neither of these species is at all confined to coastal areas; both had been taken shortly before at inland localities up to 15 or 20 miles from the sea, and at altitudes up to 2,400 ft. A peculiarity of these glow-worms was the possession of four nearly parallel rows of dorsal tubercles; this suggests the similar arrangement of tubercles on *Jamphotus tuberculatus* Barber, but it seems very doubtful whether these littoral larvae are juvenile instars of that species, since a full-grown larva of *Jamphotus* had been found at Portland Gap, St. Thomas Parish, at an altitude of about 5,600 ft. on October 14, 1950.

In spite of the low range of the normal tides, 12 to 15 inches,

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* This investigation was supported in part by the American Philosophical Society, Grant No. 1370, Penrose Fund.

it appears that the glow-worms are active only during the ebb tide; first seen at 9:30 P.M. on February 21st, they did not appear until an hour later successively, on the next three nights. At this tide stage the rocks are merely wet by spray, and the snails, which are firmly attached to the rocks when the water is washing over them, then crawl on the wet surface, and the glow-worms pursue them. The presence of the larvae on these particular rocks can hardly be unique, but they were not found on the same dates on similar rocks a few hundred feet east of this location, nor were they found a few nights later at Bloody Bay (west end of the Island), or subsequently at St. Ann's Bay (north coast) or Port Henderson (south coast). At least two, and usually all three of the same species of snails were present at these other locations. The rock formation on which they were found is only about 15 ft. long, and spray-wet for a width of about 10 ft. Only one glow-worm was seen on a dry rock above the reach of the spray. Close search during daylight hours failed to reveal a single glow-worm, but there was abundant opportunity for them to hide in crevices and holes in the rocks. Nor were any larvae or pupae found in any of the great many snail shells examined. Moonlight may also affect the activity of the glow-worms; the time during which they were seen was moonless, while some of the later examinations were in fairly bright moonlight, although the tide stage was favorable. As far as I know, only three persons beside myself have seen the glow-worms on the rocks.

Four specimens of the larvae, including the one found eating the snail, and also this snail, have been given to the Division of Insects of the U. S. National Museum; two larvae and specimens of the snail are in the Museum of the Institute of Jamaica.

Just what function, if any, the luminosity plays in the life of lampyrid larvae is obscure. Aquatic glow-worms, in fresh water, have been described by several authors; the glow-worms found in Jamaica are not strictly aquatic, but no similar habitat appears to have been noted previously.

Since the foregoing was written, information has been received that the glow-worms were still present on the rocks at Whitehouse Bay in early September.

Concerning Rheumatobates rileyi[1] Bergroth (Gerridae)

By H. B. Hungerford[2]

To me, Rheumatobates is the most interesting genus in the Gerridae. The bizarre modifications of the antennae and legs of the males in many species are strange indeed! These little striders are exceedingly lively and nervous creatures and difficult to keep in captivity. In 1920[3] I reported that the females are provided with an ovipositor for inserting the eggs in plant tissue and figured both the ovipositor and the fully developed ovum. I did not discover the deposited eggs either in field or laboratory. In 1923 at the University of Michigan Biological Station, I found large numbers of *Rheumatobates rileyi palosi* Blatchley on the slowly moving water of Bessey Creek but did not succeed in transporting many live specimens across Douglas Lake to the station laboratory. In 1927, J. K. Gwynn Silvey, at my suggestion, undertook a study of the life history of this species at the Biological Station and continued his studies during the summer of 1928. He published his results in 1931.[4] He described the mating behavior, reported a female ovipositing in the tissues at the base of a Potamogeton leaf and figured the eggs, five nymphal instars and adults. His plate is quite satisfactory but the legend incorrect, Figure 3 being the fifth instar not the first; figure 7 the first not the fifth, etc. No precise dates are given in this paper and nothing to indicate that any specimens were reared from egg to adult.

More work should be done on the biology of Rheumatobates. It may be helpful to know that the best way to bring these insects from field to laboratory is to place toweling paper in the bottom of a minnow bucket, moisten the paper and let the Rheumatobates drop from the dip net into the pail. Do not permit too much water to drip from the net into the pail and the insects will survive a considerable journey on the moist paper.

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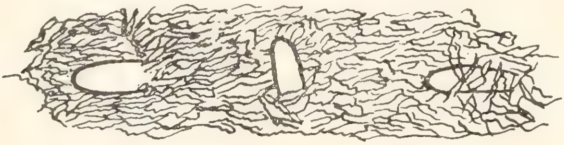
[1] Michigan specimens are *R. rileyi palosi* Blatchley.

[2] Contribution from University of Michigan Biological Station and Contribution No. 817, Department of Entomology, University of Kansas.

[3] Hungerford, H. B. 1920. The biology and ecology of aquatic and semiaquatic Hemiptera. University of Kansas Science Bulletin, Vol. XI, p. 120, Plate XVI.

[4] Silvey, J. K. Gwynn. 1931. Observations on the life history of *Rheumatobates rileyi* (Bergr.). Pap. Michigan Academy of Science, Arts and Letters, Vol. XIII, pp. 433–446, Plate XL.

In the laboratory, instead of using aquaria containing water I have had better success with finger bowls and large seven inch stender dishes in the bottoms of which had been placed several layers of toweling paper moistened but not too wet. The female Rheumatobates insert their eggs into and often protruding through the top layer of paper. While it is extremely difficult to locate the oviposition punctures from above, by peeling off the top layer of paper and examining its under side the eggs are readily found, either plainly protruding and exposed or but thinly covered by paper fibers, as shown in the text-figure.



Pieces of paper containing eggs may be cut out and placed in small stenders for following the embryological development and hatching of these insects. This same technique has been used with success in rearing Mesovelia which also lays its eggs in the paper and with Microvelia, Hydrometra and other surface forms that simply attach their eggs to the paper. It is suggested, therefore, that losses from drowning that occur in aquaria may be avoided in studies of other semiaquatic Hemiptera and may facilitate the rearing of these insects.

Two New Millipeds Taken in California Caves

By Ralph V. Chamberlin

Among millipeds taken in California and submitted to me for identification by Edward Danehy, who has been active for some years with the Stanford spelological group in the exploration of caves in that area, the two forms here described were found. Neither of these forms shows any obvious adaptive modifications to cave life unless the slightness of pigmentation in the ocelli of the *Striaria* should be open to such interpretation. The types of the new forms are in the author's collection.

Family Eurydesmidae

Genus **SIGMOCHEIR** Chamberlin

The finding of a second species referable to this genus is a matter of interest. The present form seems to be sufficiently distinct from the generotype, *S. calaveras* Chamb. in coloration and the details of the gonopods of the male, although in the latter character they are obviously close. Among related genera *Sigmocheir* agrees with *Montaphe* and *Orophe* in having no spines on the second joint of any of the legs, such a spine being present, although sometimes considerably reduced in the western genera other than these. It differs from *Montaphe* and even more strongly from *Orophe* in the smaller keels which are located higher up on the sides, with the intervening dorsum much less convex than in those genera.

Generotype: *Sigmocheir calaveras* Chamberlin

Sigmocheir dohenyi n. sp.

Head finely reticulate in black above, solid black in the area between antennae, and below this except over the labral region where yellowish. Antennae yellow. Somewhat less than anterior half of collum black, the remaining portion yellow. The immediately following tergites are black between the keels except a large sublunate median area in front of the caudal margin; the black area extends out in a narrow stripe along anterior border of the keel on each side, the remaining part of which is yellow. Farther back the entire keels are yellow and the median yellow area is enlarged, transversely oblong, to occupy most of the middle part of the metatergites, on the more posterior segments fusing with the yellow area of the keels. The prozonites are greenish white except the caudal portion which is black and a median tongue-like or triangular extension of the black area subdividing the light area, the black also extensing foward on each side between bases of keels. Lower part of tergites and the venter yellow. Basal part of anal tergite black, the cauda yellow. Legs yellow.

Antennae slender, the second to sixth articles not much differing in length, the sixth more strongly clavately widening distad than the others.

Collum much wider than the head and than the second tergite; anterior corners widely obliquely rounded off, the posterior corners narrowly rounded; median portion of anterior margin straight, the caudal margin subarcuate, moderately convex over middle portion and nearly straight at sides where oblique.

Keels inserted rather high up on the sides, horizontal, none overlapping though some may be in contact on anterior segments, well separated over most of body. Keels margined narrowly anteriorly and posteriorly, the lateral margining thicker, pores opening laterally through a moderate thickening of the margin. Keels of anterior segments subrectangular; farther back the anterior corners become more and more rounded off; on last several pairs of keels the posterior corners become produced caudad, those of the 17th and 18th most strongly so, those of the 19th reduced. Cauda narrow, nearly straight; much exceeding the valves.

Legs with none of the joints with a distal spine. Likewise no sternal spines.

Width of female holotype, 7 mm.

Locality: California, Tuolumme Co., Crystal Palace Cave. One female taken in twilight zone by Hal Treacy, Dec. 17, 1951.

Family Striariidae

Striaria eldora new species

Light horn brownish or in part somewhat dusky above from adherent fine particles of dirt, the sides and venter yellow, and legs and antennae yellow.

Eyes pale, the ocelli small, compactly arranged in a triangular patch on each side, 12 or 13 in number. Antennae of moderate length, clavately thickened distad; geniculate at end of second article; the second and fourth articles longest.

Collum resembling that of *granulosa* but relatively shorter, much less than twice as long as the second tergite; the crests unusally low, almost striaform, short, incomplete anteriorly, the surface roughened between them.

The succeeding tergites with the usual twelve crests, these more elevated at their ends; surface between crests finely granular. Anal tergite with the large median lobe caudally rounded, the angle of the indentation separating off the lateral lobe on each side obtuse.

Width, about 1 mm.

Locality: CALIFORNIA, Eldorado Co., Crystal Cosumnes Cave. Three females taken in the cave in total darkness by Art Lang and Gill Lange, on Feb. 2, 1952.

Insects of Micronesia

J. LINSLEY GRESSITT has been appointed Entomologist, Bernice P. Bishop Museum, Honolulu. He is in charge of the project "Insects of Micronesia," now being taken over by Bishop Museum from the Pacific Science Board. A grant of $15,200 has been made to Bishop Museum by the National Science Foundation to help support the project for the next 18 months. One hundred specialists of a dozen countries are now collaborating on the project. J. F. GATES CLARKE, N. L. H. KRAUSS and DR. GRESSITT have been completing the field work in the Caroline Islands during 1952–53 under the Science Board's contract with the Office of Naval Research.

Concerning a New Genus, Dinocryptops, and the Nomenclatorial Status of Otocryptops and Scolopocryptops (Chilopoda: Scolopendromorpha: Cryptopidae)

By RALPH E. CRABILL, JR., Department of Entomology,
Cornell University, and Ithaca College

In 1844 Newport proposed a new genus, *Scolopocryptops*,[1] to which he referred five species: *miersii* sp.n.; *melanostoma* sp.n.; ferruginea (Linne); *sexspinosa* (Say); and *longitarsis* sp.n. He designated no type. In 1895 Pocock[2] stated that the type of this genus was *miersii* Newport, and subsequent authors have accepted his decision.

When Erich Haase proposed *Otocryptops* in 1887,[3] he included a single species, *rubiginosa* (L. Koch), 1878, within it which, of course, established its type by monotypy.

But all authors have overlooked the fact the Hippolyte Lucas had already fixed the type of *Scolopocryptops* in 1849[4] when he stated that its type was *Scolopocryptops melanostoma* Newport, 1844. Therefore, since *rubiginosa*, the type of *Otocryptops*, is congeneric with *melanostoma*, which is the type of *Scolopocryptops*, *Otocryptops* is a subjective synonym of *Scolopocryptops*. There is no available generic name for the species previously referred to *Scolopocryptops;* therefore, I propose the new genus *Dinocryptops*, for their reception.

In summary, those species previously referred to *Otocryptops*, i.e., *sexspinosus* (Say), *melanostomus* (Newport), *rubiginosus* (L. Koch), etc., must be accorded the generic name *Scolopocryptops*, whereas *miersii* (Newport), *broelemanni* (Kraepelin), etc. are referred to a new genus, *Dinocryptops*, the type of which is *Scolopocryptops miersii* Newport, 1844 [= *Dinocryptops miersii* (Newport)].

[1] Trans. Linn. Soc. London, XIX, p. 275 (1844).

[2] Biol. Centr. Amer., Chilop. Diplop., p. 28 (1895).

[3] Abhand. Mus. Dresden, V, p. 96 (1887).

[4] Dict. Univ. D'Hist. Nat., XI, p. 444 (1849).

A Check List of the Trichoptera (Caddis Flies) of New Hampshire

By Wallace J. Morse and Robert L. Blickle[1], [2]

(*Continued from p. 73*)

Banksiola Martynov

calva Banks, Durham (lt), June 16–Aug. 9; **canadensis** (Banks), Durham (lt), June 28–30; **concatenata** (Walker), Claremont, Hampton, Mt. Washington, Squam Lake (LJM), July 22; **dossuaria** (Say), NH (LJM, CB), Durham (lt), June 16; **selina** Betten, Bow, Durham, Hopkinton (lt), Lee (RLB; lt), June 18–Aug. 26; **smithi** (Banks), New Durham (JGC), July 19.

Ptilostomis Kolenati

angustipennis (Hagen), Newfields (PRL), Aug. 22; **ocellifera** (Walker), Claremont, Franconia, Milford, Squam Lake (LJM), Barrington (WJM, JGC), Durham (lt), Exeter, Lee (RLB), June 3–Aug. 13; **posita** (Walker), NH (LJM), Newfields, Aug. 23; **semifasciata** (Say), Squam Lake (LJM), Durham (JGC), Lee (lt), June 5–July 30.

Phryganea Linneaus

cinerea Walker, Squam Lake (LJM), Lee (lt), July 13–15.

LIMNEPHILIDAE

Radema Hagen

incerta (Banks), Franconia (CB, LJM), Durham (CFF), May 29.

Dicosmoecus McLachlen

quadrinotatus (Banks), White Mountains, Randolph (NB, LJM), Sept. 23.

Platycentropus Ulmer

indistinctus (Walker), White Mountains (NB, LJM), July; **radiatus** (Say), White Mountains (LJM), Durham (JGC; lt), Lee (RLB, lt), Newport (lt), July 5–Aug. 24.

Glyphotaelius Stephens

hostilis Hagen, New London (HHR), Durham, Lee, Plymouth (lt), May 26–Aug. 21.

Astenophylax Ulmer

argus (Harris), Franconia (LJM), Durham, Plymouth (lt), June 13–July 3.

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[1] N. H. Agr. Expr. Sta.

[2] Scientific Contribution No. 147.

Hesperophylax Banks

designatus (Walker), NH (HHR).

Ironoquia Banks

parvula (Banks), Durham (lt), Lee (RLB), June 18–Oct. 24.

Limnephilus Leach

bimaculatus Walker, Squam Lake, White Mountains (LJM), Durham, Lee (lt), June 30–July 20; **consocius** Walker, NH (CB, HHR), Durham (JGC, WJM; lt), Hopkinton, Lee, Newington (lt), Apr. 24–Aug. 15; **curtis** (Banks), White Mountains (alpine) (LJM), Aug. 10; **extractus** Walker, Claremont (LJM), May 10; **hyalinus** Hagen, Claremont (NB), Rumney (lt), July 30; **indivisus** Walker, Claremont, Hampton (LJM), Durham, Hopkinton (lt), Lee (RLB; lt), Plymouth (lt), June 24–Sept. 6; **moestus** Banks, Concord, Franconia, Mt. Kingsman, Rumney, Squam Lake (LJM), Bow, Durham, Lancaster, Lee, No. Hampton (lt), June 12–Sept. 17; **montanus** (Banks), Franconia, Mt. Washington (CB, LJM); **ornatus** Banks, Franconia (CB), Durham, Lee (lt), June 20–July 17; **ozburni** (Milne), Lee, Plymouth (lt), June 24–July 3; **parvulus** (Banks), Barrington, Durham, Lee (lt), May 10–July 6; ***plaga** Walker, NH (LJM, CB); **sericeus** (Say), Claremont, Dublin, Hampton, White Mountains (LJM), Durham, Plymouth (lt), June 29–Aug. 24; **sordidus** (Hagen), Durham, Lee (lt), July 20–Aug. 9; **submonilifer** Walker, Franconia, Milford, Mt. Washington, Squam Lake (LJM, CB), Durham (WJM; lt), Lee (RLB; lt), Plymouth (lt), May 1–Nov. 16; **vastus** Hagen, White Mountains (LJM).

Pycnopsyche Banks

antica (Walker), White Mountains (NB), Durham, Hopkinton (lt), Lee (RLB; lt), Plymouth (lt), June 24–Sept. 14; **circularis** (Provancher), NH (CB), Durham (lt), Sept. 28; **conspersa** Banks, White Mountains (NB); **gentilis** (McLachlan), Franconia, White Mountains (LJM), Durham (lt), June 10; **guttifer** (Walker), Franconia, Shelburne (LJM, CB), Durham (lt), Lee (RLB; lt), No. Hampton (lt), Twin Mountain (CFF), June 24–Oct. 5; **lepida** (Hagen), Durham (lt), Lee (RLB; lt), Aug. 2–Oct. 1; limbata (McLachlan), Hopkinton (lt), Aug. 30; **luculenta** (Betten), NH (CB); **scabripennis** (Rambur), White Mountains (LJM), July; **subfasciata** (Say), White Mountains (LJM), July 26.

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* May be a synonym of *L. sericeus*.

Caborius Navas

lyratus Ross, Durham, Plymouth (lt), May 24–Oct. 5; **punctatissimus** (Walker) Hampton (LJM), Durham, Hopkinton, Lee, Newington (lt), Aug. 22–Sept. 28.

Frenesia Betten & Mosely

difficilis (Walker), Franconia, Dublin, Mt. Monadnock, Squam Lake (LJM, CB), Durham (WJM, JGC, RLB; lt), Lee (RLB), June 24–Dec. 3; **missa** (Milne), Mt. Monadnock (LJM), Durham (WJM, JGC; lt), Lee (RLB), Oct. 24–Nov. 18.

Glyphopsyche Banks

irrorata (Fabricius), NH (CB).

Psychoglypha Ross

subborealis (Banks), Lee (RLB), Nov. 14–15.

Phanocelia Banks

canadensis (Banks), Durham (lt), Oct. 19.

Drusinus Betten

sparsus (Banks), White Mountains (LJM); **uniformis** Betten, Durham, Lee (lt), June 16–July 15.

Neophylas McLachlan

aniqua Ross, White Mountains (DGD), July 2–Sept. 4; **concinnus** McLachlan, Dublin, Franconia (LJM); **fuscus** Banks, Franconia (CB, LJM); **nacatus** Denning, Jefferson (DGD), Sept. 16; **oligius** Ross, Durham, Lee (lt), Aug. 25–Oct. 24; **ornatus** Banks, White Mts. (CB, LJM); **slossonae** Banks, Franconia (NB).

MOLANNIDAE

Molanna Curtis

blenda Sibley, Lee (lt), July 5; **cinerea** Hagen, Franconia, Squam Lake (LJM), July 29; **musetta** Betten, Bow, Durham, Freedom, Lee, N. Conway (lt), Northwood (JGC), Plymouth (lt), June 9–Aug. 30; **tryphena** Betten, Durham, Lee (lt), June 25–Aug. 25; **uniophila** Vorhies, Squam Lake (LJM), Aug. 10–11.

ODONTOCERIDAE

Psilotreta Banks

frontalis Banks, Lee (lt), June 30; **indecisa** (Walker), Claremont, Franconia, Gorham (LJM), Colebrook (WJM, RLB), June 19–July 20; **labida** Ross, Benton (HHR), Durham, Lee (JGC; lt), May 1–June 26.

CALAMOCERATIDAE

Ganonema McLachlan

americanum (Walker), NH (LJM), Lee (WJM), June 22.

LEPTOCERIDAE

Leptocerus Leach

americanus (Banks), Durham (WJM; lt), June 18–July 23.

Leptocella Banks

candida (Hagen), NH (LJM); **exquisita** (Walker), NH (LJM), Bow, Durham, Lee (lt), June 25–July 30; **pavida** (Hagen), Bow, Hopkinton, Lee (lt), Northwood (WJM), July 3–27; **uwarowii** (Kolenati), NH (LJM).

Athripsodes Billberg

alagmus Ross, Bow, Durham, Lee (lt), June 15–July 19; **angustus** (Banks), Bow, Hopkinton, Durham, Lee (lt), June 19–Aug. 8; **cancellatus** (Betten), Bow, Durham, Hopkinton, Lee, Plymouth (lt), June 30–Aug. 7; **dilutus** (Hagen), Durham, Lee (lt), June 19–Aug. 29; **flavus** (Banks), Dublin, Squam Lake (LJM), July; **mentieus** (Walker), Milford, Squam Lake (LJM), June 2; **punctatus** (Banks), Durham, Hopkinton, Lee (lt), June 20–Aug. 10; **resurgens** (Walker), Squam Lake (LJM), Bow, Durham, Hopkinton, Lee (lt), June 5–Aug. 8; **tarsi-punctatus** (Vorhies), Bow, Durham, Hopkinton, Lee, Plymouth (lt), June 24–Aug. 7; **transversus** (Hagen), Squam Lake (LJM), Bow, Lee, Plymouth (lt), June 24–Aug. 7.

Oecetis McLachlan

avara (Banks), Durham (WJM; lt), Hopkinton, Lee, Rumney (lt), June 28–Aug. 30; **cinerascens** (Hagen), Bow, Durham, Freedom, Hopkinton, Lee, Newport, Plymouth, Rumney (lt), June 9–Sept. 2; **immobilis** (Hagen) Durham, Plymouth (lt), June 27–Sept. 2; **inconspicua** (Walker), NH (LJM), Bow, Durham, Freedom, Hopkinton (lt), Lee, (RLB, WJM; lt), Lee (RLB, WJM; lt), Northwood (JGC), Plymouth, Rye (lt), June 15–Sept. 8; **osteni** Milne, Durham (HHR), Durham, Freedom, Lee, Rumney (lt), June 18–Aug. 30; **persimilis** (Banks), Durham, Hopkinton, Lee (lt), July 3–Sept. 10; **scala** Milne, Hopkinton (lt), July 18–Aug. 8.

Triaenodes McLachlan

aba Milne, Durham (HHR), Durham, Lee, Plymouth (lt), June 9–Sept. 10; **baris** Ross, Bow, Durham, Lee (lt), June 24–Aug. 21; **ignita** (Walker), Hampton (NB); **injusta** (Hagen), Durham, Lee (lt), June 20–Aug. 27; **nox** Ross, Durham, Lee, Plymouth (lt), June 9–July 30; **perna** Ross, Durham, Lee (lt), July 4–Aug. 27; **tarda** Milne, Hampton (LJM), Bow, Durham, Freedom, Lee (lt), June 18–Aug. 25.

Mystacides Berthold

longicornis (Linnaeus), Bennington, Squam Lake (LJM), Northwood (WJM), July 11–23; **sepulchralis** (Walker), NH (LJM), Durham (WJM, RLB; lt), Lee (lt), May 29–Aug. 24.

Setodes Rambur

incerta (Walker), Durham, Hopkinton (lt), July 5–Aug. 8.

Goeridae

Goera Curtis

calcarata Banks, Colebrook, Durham, Lee (lt), July 10; **stylata** Ross, Plymouth (lt), June 24.

Lepidostomatidae

Lepidostoma Rambur

americanum (Banks), Franconia (LJM, CB); **bryanti** (Banks), Lee (lt), June 22–27; **costalis** (Banks), White Mts. (LJM, HHR), Lee (lt), Aug. 10; **frosti** (Milne), Gorham, Pinkham, White Mts. (LJM, HHR), July 20–26; **griseum** (Banks), White Mts. (LJM); **latipennis** (Banks), Lee (lt), Aug. 21–30; **lydia** Ross, Mt. Washington, Warren, Woodstock (HHR), Bradford (WJM), Lee, Rye (lt), June 16–Sept. 6; **modestum** (Banks), Franconia (LJM); **ontario** Ross, Benton, Mt. Washington, Randolph, Woodstock (HHR); **prominens** (Banks), Mt. Washington (DGD), July 29–Aug. 4; **sackeni** (Banks), N. Conway (NB), Durham, Hopkinton, Lee, Plymouth (lt), Aug. 11–Sept. 19; **swannanoa** Ross, Benton, Mt. Washington, Woodstock (HHR); **togatum** (Hagen), Squam Lake, Mt. Washington (LJM), Durham, Lee (lt), June 14–Sept. 7; **vernalis** (Banks), White Mts. (DGD), July 17.

Brachycentridae

Micrasema McLachlan

wataga Ross, Bow, Durham, Hopkinton, Lee, Plymouth, Rumney (lt), June 11–Aug. 30.

Brachycentrus Curtis

americanus (Banks), Franconia (LJM, CB); **lateralis** (Say), Pinkham (LJM).

SERICOSTOMATIDAE

Sericostoma Berthold

distinctum (Ulmer), Squam Lake, Franconia (LJM), Durham (JGC; lt), Hopkinton (lt), Lee (RLB; lt), May 1– July 30; **griseum** (Banks), Durham (WJM, JGC; lt), Lee (RLB; lt), May 1–Aug. 1.

HELICOPSYCHIDAE

Helicopsyche Hagen

borealis (Hagen), West Milan (HHR), Durham (WJM, RLB; lt), Lee (RLB; lt), June 7–July 30.

Current Entomological Literature

Compiled by **VENIA T. PHILLIPS**, Librarian

Academy of Natural Sciences of Philadelphia

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania pertaining to entomology, including all arthropods except Crustacea. Coverage will be world-wide as regards major contributions to systematics as well as for all papers on morphology, physiology, embryology, etc. In addition, for species from the Americas and the Pacific (Nearctic, Neotropical and Polynesian regions) all minor contributions to taxonomy, distribution, etc., will also be recorded.

This list gives references of the year 1952 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

GENERAL—Beebe, W.—Introduction to the ecology of the Arima Valley, Trinidad, B. W. I. [154] 37: 157–83, ill. **Butler, J. M.**—Improved micro-dissecting instruments for helminthological and other zoological use. [Turtox News] 31: 2–3. **Foote, R. H.**—A method of making whole mounts, of mosquito larvae for special study. [80] 38: 494–5. **Gaufin, A. R. and C. M. Tarzwell.**—Aquatic invertebrates as indicators of stream pollution. [Pub. Health Rpt.] 67: 57–64. **Gaul, A. T.**—The wonderful world of insects. Rinehart & Co., N. Y. $4.00, 290 pp., 1953. **Gross, G. F.**—Desert insects (with discussion of environmental zones within the desert). [South Austr. Nat.] 27: 21–25, ill. **Hiller, R.**—Über Mikroaufnahmen von Bernsteininklusen. [28] 2: 458–60. **Hofender, K.**—Verzeichnis der Strepsiptera und ihre Wirte (Nachtrag). [25] 2: 473–521. **Kloft, W.**—Eine Käferzucht im mikrokopischen Präparat. [Mikrokosmos] 42: 71–2, ill. **Kruseman, G.**—Consideraciones entomologicas (El Salvador). [Comunicaciones Inst. Trop. Invest. Cient.] 4: 5–10. **Kullenberg, B.**—Ophrys insectifera L. et les insectes. [107] 3: 53–70, ill., 1951. **Kuschel, G.**—Los insectos de las islas Juan Fernandez. Introduction. [Rev. Chilena Ent.] 2: 3–6. **Le Marchand, S.**—Un peu de grammaire entomologique et . . . étymologique. [119] 13: 247–8. **Maksimovic, M.**—Znacaj odnosa brojnosti zivotinjskih polulacija i teorije regulacije brojnosti u sumskoj biocenozi (Population studies). [Zastita bilja, Beograd] 12: 87–99. **Miller, R. R.**—X-ray photography as a tool in systematics. (Abstract.) [146] 1: 185. **Pronin, G. F.**—Suggestions on preventing outbreaks of bark beetles in California pine forests. [111] 28: 186–88. **Uhler, L. D.**—How to make a cyanide killing jar. [Turtox News] 31: 30. **Viette, P.**—Une technique de préparation des armures génitales. [119] 13: 249–52. **Williams, C. B.**—Some notes on killing insects for collections and for scientific research. [58] 85: 271–79. **Wood, S. F. and F. D.**—A water cooler for transporting heat sensitive animals, especially insects. [145] 51: 108–11, ill. **Zinn, D. J.**—A useful inexpensive modification of the Berlese funnel. [Turtox News] 31: 16–18, ill.

BIOGRAPHIES, OBITUARIES—Corporaal, Johannes Bastiaan, 1880–1952.—Gestorben. [28] 2: 527. (Obit.) **Gigoux, Enrique Ernesto,** 1863–1951.—(Obit.) by Gabriel Olalquiaga. [Rev. Chilena Ent.] 2: 314–5. **Meyer, Paul,** 1876–1951.—(Obit. with port. and bibl.) by O. Scheerpeltz. [Ent. Blätter] 47/48: 113–19. **Pellett, Frank C.,** 1879–1951.—(Obit.) by Floyd R. Paddock. [Proc. Iowa Acad. Sci.] 59: 52–3. **Perez, Charles,** 1873–1952.—(Obit.) by A. Caquot. [2] 235: 1566–67. **Schmidt, Heinrich J. C.,** 1863–1948.—Meinen Sammelfreunde Heinrich Schmidt zum Gedächtnis. (Obit.) by Erich Uhmann. [Ent. Blätter] 47/48: 119–20. **Storch, Otto,** 1886–1951.—(Obit. with port. and bibl.) by

W. Marinelli. [104] 3: 487–93. **Sulc, Karel,** 1872–1952.—Gestorben by Hans Sachtleben. [28] 2: 527–8. (Obit.) **Wolffhügel, Kurt Wolfgang,** 1869–1951.—(Obit.) by G. K. [Rev. Chilena Ent.) 2: 315–6.

ANATOMY, PHYSIOLOGY, MEDICAL—Barnhart, C. S. and L. E. Chadwick—A "fly factor" in attractant studies. [Science] 117: 104–5, 1953. **Dobzhansky, T.**—Experimental evolution in Drosophila. [148] 4: 545–50. **Eichler, W.**—Behandlungstechnik parasitärer insekten. Leipzig, Akad. Verlagsgesell. Geest & Portig, 1952. 286 pp., 82 text figs. 19.60 DM. (Reviewed in [28] 2: 524–5.) **Faust, R.**—Untersuchungen zum Halterenproblem. [159] 63: 325–66. **Ferris, G. F.**—On the comparative morphology of the Annulata. A summing up. [90] 18: 2–15, 1953. **Fröbich, G. und K. Offhaus**—Ein neuer Nahrungsfaktor, der die Metamorphose von Tribolius confusum Duv. (Tenebr., Col.) ermöglicht. [100] 39: 575. **Gibson, C. L. and W. F. Ascoli.**—The relation of Culicoides (Diptera: Heleidae) to the transmission of Onchocerca volvatus. [80] 38: 315–20. **Martini, E.**—Lehrbuch der medizinischen entomologie, 4. auflagé. Mit beiträgen von F. Peus und W. Reichmuth. Jena, G. Fischer, 694 pp., 318 text figs. 38 DM. 1952. (Review in [28] 2: 523–4.) **Spiess, E. B., B. A. Terrile and U. Blumenheim.**—Physiological properties of gene arrangement carriers in Drosophila persimilis. II. Wing-beat frequency and wing dimensions. [62] 6: 421–27. **Townsend, J. I., Jr.**—Genetics of marginal populations of Drosophila willistoni. [62] 6: 428–42. **Virkki, N.**—Zur Zytologie einiger Scarabaeiden: Studien an der Spermatogenese. [Suom. Eläin-ja Kasvit. Seura Vanamo, Julk.] 14, no. 3, 104 pp., ill., 1951. **Vité, J. P.**—Temperaturversuche an Ips typographus L. (Coleoptera.) [159] 149: 195–206, ill. **Wahab, A. A.**—Some notes on the segmentation of the scorpion, Buthus quinquestriatus (H.E.). [Egypt. Acad. Sci., Proc.] 7: 75–91, ill., 1951.

ARACHNIDA AND MYRIOPODA—Bolwig, N.—Observations on the behaviour and mode of orientation of hunting Solifugae. [55] 15: 239–40. **Freeman, R. S.**—The biology and life history of Monoecestus Beddard, 1914 (Cestoda: Anoplocephalidae) from the porcupine. (Acarina.) [80] 38: 111–29, ill. **Goodnight, C. J.**—Speciation among the opiliones (Arachnida). (Abstract.) [146] 1: 183. **Grandjean, F.**—Observations sur les oribates (24 ser.). (Includes preparation techniques.) [Paris. Mus.

Nat. d'Hist. Nat. Bulletin, 2d ser.] 24: 187–94. **Henry, L. M.**—The nervous system of the Pycnogonida. [90] 18: 16–36, ill., 1953. **Keegan, H. L. and R. A. Hedeen.**—Collections of ectoparasitic mites from Alaska. [80] 38: 360–61. **Liro, J. I. and H. Roivainen.**—Äkämäpunkit, Eriophyidae. [Suom. Eläin-ja Kasvit. Seura Vanamo. Suomen Eläimet] no. 6, 281 pp., ill., 1951. **Menzies, G. C. and R. W. Strandtmann.**—A new species of mite taken from nest of armadillo (Acarina Laelaptidae, Hypoaspinae). [56] 54: 265–73, ill. **Nørgaard, E.**—On the ecology of two lycosid spiders (Pirata piraticus and Lycosa pullata) from a Danish sphagnum bog. [107] 3: 1–21, ill., 1951. **Palmen, E.**—Survey of the Diplopoda of Newfoundland. [Suom. Eläin-ja Kasvit. Seura Vanamo, Julk.] 15, no. 1, 31 pp., ill. **Pauly, F.**—Die "Copula" der Oribatiden (Moosmilben). [100] 39: 572–73, ill. **Radford, C. D.**—A revision of the fur mites Myobiidae (Acarina) (suite). [Paris. Mus. Nat. d'Hist. Nat., Bull. 2d ser.] 24: 371–81, ill. (*). **Roth, V. D.**—Notes and a new species in Cybaeina (Arachnida: Agelenidae). [111] 28: 195–201, ill. **Strandtmann, R. W.**—Host-parasite relationships in avian nasal mites. (Abstract.) [146] 1: 184–5. **Toumanoff, C. and C. Vago.**—L'effet de l'alcalinité du milieu de culture sur la virulence de Bacillus cereus var. alesti Toum. et Vago, pour les vers à soie. [2] 235: 1715–17. **Trägardh, I.**—Acarina, collected by the Mangarevan expedition to southeastern Polynesia in 1934 by the Bernice P. Bishop Museum, Honolulu, Hawaii. Mesostigmata. [25] 4: 45–90, ill. (*). **Vachon, M.**—Remarques préliminaires sur quelques insectes parasites (Diptères et Hyménoptères) des cocons et oeufs d'araignées. [Paris. Mus. Nat. d'Hist. Nat., Bull. 2d ser.] 24: 200–3. **Wehr, E. E.**—Dermoglyphus elongatus (Mégnin, 1877), a quill mite of the house canary in the U. S. (Acarina.) [80] 38: 548–9. **Young, M. D. and R. W. Burgess.**—Susceptibility of Anopheles quadrimaculatus to Korean vivax malaria. [Pub. Health Rpt.] 67: 14–16.

SMALLER ORDERS—Edmunds, G. F.—Convergent evolution among the nymphs of mayflies (Ephemeroptera). (Abstract.) [146] 1: 183. **Emerson, A. E.**—The neotropical genera Procornitermes and Cornitermes (Isoptera, Termitidae). [14] 99: 479–539, ill. (*). **Gaufin and Tarzwell.**—(See General.) **Hofender, K.**—(See General.) **Hood, J. D.**—Mecynothrips snodgrassi, a new thrips from the Solomon Islands (Thysanoptera). [56] 54: 294–301, ill.

Hughes, G. M.—"Giant" fibres in dragonfly nymphs (Anisoptera). [98] 171: 87–8, ill., 1953. **Illies, J.**—Die europäischen Arten der Plecopteraengattung Isoperla Banks (= Chloroperla Pictet). [28] 2: 369–424, ill. **Kalshoven, L. G. E.**—Observations on the attractiveness of certain materials for termites. [57] 14 (no. 330): 188–90. **Mayo, V. K.**—New western Ephemeroptera, IV; with notes. [111] 28: 179–86, ill. **Schmid, F.**—Trichoptera (Islas Juan Fernandez). [Rev. Chilena Ent.] 2: 29–34, ill. (*). **Smit, F. G. A. M.**—Monstrosities in Siphonaptera III. Castration in a male Ceratophyllus gallinae (Schrank). [57] 14 (no. 330): 182–87, ill. **Snyder, T. E.**—Know your termites and local incidence of infestation. [Pest Control] 21: 27–8, 1953. A new Rugitermes from Guatemala (Isoptera, Kalotermitidae). [56] 54: 303–05. **Stark, H. E.**—The possible occurrence of random fixation in a population of fleas. (Abstract.) [146] 1: 183. **Traub, R. and P. T. Johnson.**—Four new species of fleas from Mexico (Siphonaptera). [13] no. 1598: 1–28, ill. **Valle, K. J.**—Sudenkorennot, Odonata. [Suom. eläin-ja Kasvit. Seura Vanamo. Suomen Eläimet] no. 7, 159 pp., ill. (k). **Woodland, J. T.**—The styli of the firebrat, Thermobia domestica (Packard). (Thysanura.) [Proc. Penn. Acad. Sci.] 26: 27–32, ill. **Wygodzinsky, P.**—Thysanura from Juan Fernández Island. [Rev. Chilena Ent.] 1: 199–204 (*), 1951. **Yates, J.**—Halothrips niger Osb., the red clover thrips (includes discussion of diapause). [N. Z. J. of Sci. & Tech. Sect. B] 34: 166–72, ill.

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HEMIPTERA—Carvalho, J. C. M.—Miridae (Neotropical Miridae, 54) (Islas Juan Fernandez). [Rev. Chilena Ent.] 2: 21–28, ill. (*). **Cumber, R. A.**—Studies on Oliarus atkinsoni Myers (Cixiidae) vector of the "Yellow-leaf" disease of Phormium tenax Forst. II. Nymphal instars and seasonal changes in the composition of nymphal populations. [N. Z. J. of Sci. & Tech. Sect. B] 34: 160–65, ill. **Drake, C. J.**—A new tropical hybrid. [111] 28: 194. **Dušková, F.**—Vergleich der morphologischen Hauptmerkmale der Schildläuse Quadraspidiotus piri (Lichtenstein) und Q. mařani Sahradník. (Coccoidea: Diaspididae). [28] 2: 452–5, ill. **Essig, E. O.**—A new genus and species of Aphidae on Scotch broom in Oregon. [111] 28: 215–19, ill. **Hottes, F. C.**—Miscellaneous notes on the taxonomy of some aphid species. [111] 28: 191–93. **Kontkanen, P.**—Quantitative and seasonal studies on the leafhopper fauna of the field stratum on open areas in north Karelia. [Suom. Eläin-ja Kasvit. Seura Vanamo, Julkaisuja (Ann. zool. Soc. Zool. Bot. Fennica Vanamo)] 13: no. 8, 91 pp., ill., 1950. **Kormilev, N. A.**—Los insectos de la islas Juan Fernandez. Lygaeidae. [Rev. Chilena Ent.] 2: 7–15, ill. (*). **Linnavuori, R.**—Studies on the ecology and phenology of the leafhoppers (Homoptera) of Raisio (s.w. Finland). [Suom. Eläin-ja Kasvit. Seura Vanamo, Julkais.] 14: no. 6, 32 pp. **Ruckes, H.**—Some scutelleroid Hemiptera of the Bahama Islands, British West Indies. [13] 1591: 1–9. **Sailer, R. I.**—The identity of Stenocephalus mexicanus Ashmead (Coreidae). [56] 54: 301–03. **Slater, J. A.**—An annotated list of the Lygaeidae of Iowa and Illinois. [Proc. Iowa Acad. Sci.] 59: 521–40. **Wagner, E. and J. A. Slater.**—Concerning some holarctic Miridae. [56] 54: 273–81, ill. (*). **Wygodzinsky, P.**—Contribución al conocimiento del género Metapterus Costa, 1860, de las Américas y de Juan Fernández (Reduv.). [Rev. Chilena Ent.] 1: 113–28 (k*), 1951. Reduviidae y Cimicidae Islas Juan Fernandez). [Rev. Chilena Ent.] 2: 15–19, ill. (*).

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Studies in Panama Culicoides (Diptera, Heleidae). III. A New Species Related to phlebotomus (Williston)[1]

By WILLIS W. WIRTH[2] and FRANKLIN S. BLANTON[3]

Twelve new species of *Culicoides* have been described in two previous papers (Jour. Wash. Acad. Sci.; Jour. Parasit., in press) of this series, which is based primarily on material collected by the junior author in Panama. In this paper we wish to clarify the status of an important pest at Caribbean seaside resorts, *Culicoides phlebotomus* (Williston), and to describe a new species closely allied to it from Panama.

We are greatly indebted to Paul Freeman, of the British Museum, for generously making available paratypes of *Culicoides amazonius* Macfie and for critical comparisons of our specimens with the type of *Ceratopogon phlebotomus* Williston; to John Lane and O. P. Forattini, of the University of São Paulo, Brazil, for critical notes and for the gift of Brazilian specimens; to Irving Fox, of the University of Puerto Rico, for Puerto Rican material and for valuable advice and suggestions; and to Paul Woke, of the U. S. Public Health Service, for the gift of specimens. Unless otherwise noted, all material studied is in the collection of the U. S. National Museum, Washington, D. C.

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Culicoides phlebotomus (Williston) (figures 1, 2)

Ceratopogon phlebotomus Williston, 1896, Trans. Ent. Soc. London 3:281 (♀; St. Vincent Island, British West Indies).

Culicoides phlebotomus, Hoffman, 1925, Amer. Jour. Hyg. 5:285 (female redescr.; Puerto Rico; figure of wing); Painter, 1926, United Fruit Co. Med. Rept. 15:258 (Honduras; biology); Fox, 1942, Puerto Rico Jour. Publ. Hlth. & Trop. Med. 17:419 (pupa; Virgin Islands); Fox, 1946, Ann. Ent. Soc. Amer. 39:252 (St. Croix); Barbosa, 1947, An. Soc. Biol. Pernambuco 7:24 (Trinidad).

Culicoides amazonius Macfie, 1935, Stylops 4:52 (male, female; Tutóia, Brazil; male genitalia figured); Macfie, 1927, Ann. Mag. Nat. Hist. (10)20:6 (Trinidad); Costa Lima, 1937, Mem. Inst. Oswaldo Cruz 32:414 (Pará, Brazil); Floch and Abonnenc, 1942, Inst. Pasteur Guyane Inini Publ. 37:3 (Cayenne, Fr. Guiana; figure of female wing, palpus); Barbosa, 1947, An. Soc. Biol. Pernambuco 7:11 (Pernambuco, Brazil). NEW SYNONYMY.

Material examined:

PUERTO RICO: Fort Buchanan, May, 1951, I. Fox (light trap), 1 female. Guanica, June 22, 1952, F. S. Blanton (light trap), 14 females.

MEXICO: Salina Cruz, Oaxaca, F. Knab, 1 female.

HONDURAS: Puerto Castilla, Sept. 21, 1943, K. R. Maxwell (horse trap), 12 females.

NICARAGUA: Corinto, Jan. 17–23, 1943, P. A. Woke (biting man and at light), 8 males, 27 females.

PANAMA: Arraijan, Panama Prov., May 21, 1951, F. S. Blanton (light trap), 9 males, 70 females. Mojinga Swamp, Fort Sherman, Canal Zone, Nov. 14, Dec. 10, 1951, F. S. Blanton (light trap), 2 females. Rio Hato, Coclé Prov., Sept. 24, 1951, F. S. Blanton (light trap), 1 female. Palm Beach near San Carlos, Panama Prov., Sept. 17, 1952, F. S. Blanton (light trap), 7 females.

VENEZUELA: Puerto Cabello, Carabobo, Nov. 12, 1951, L. W. Teller (biting man at beach), 1 female.

BRAZIL: Tutóia, Maranhao, 1934, E. M. Lourie, 2 females [British Museum; paratypes of *amazonius;* one deposited in the U. S. National Museum through the courtesy of the British Museum]. Conceicao Beach, Pernambuco, April, 1944, F. Barbosa, 1 male. Caponga, M. Cascavel, Ceará, Nov., 1939, 2 females.

As a result of the descriptions by Hoffman (1925) and Macfie (1935), this species has been well characterized. Indeed, it is puzzling that Macfie, having access to Williston's type of *phlebotomus* at London, and mentioning that species in his description of *amazonius,* but without giving characters for their separation, could have been misled into describing the Brazilian material as new. Probably the fact that he had no male specimens from any known localities for *phlebotomus,* together with the southern distribution of his specimens, prompted him to go ahead. In the recent keys to Neotropical *Culicoides,* these two species are separated only by the cordiform fourth tarsal segment of *amazonius,* which *phlebotomus* is said to lack (Costa Lima, 1937; Barbosa, 1947; Macfie, 1948). Therefore a careful study was made of the material listed above, especially that from Puerto Rico and Venezuela, localities which are adjacent to St. Vincent and at which *phlebotomus* should most likely occur. All specimens were found to have the fourth tarsal segment cordiform, of the same shape as the paratypes of *amazonius* from Brazil (also as in figure 3, of *willistoni* n. sp.). Mr. Paul Freeman informs us that the same is true of Williston's type of *phlebotomus* in the British Museum. The only difference which could be found between the three Brazilian lots and those from farther north were that in the former the wings were not so strongly infuscated, the wing being mostly yellowish proximad of the r-m crossvein, a character obviously not of specfic value. The wing of a female from Fort Buchanan, Puerto Rico (fig. 1), shows the more conspicuous extreme of markings. One of the Tutóia paratypes was found to have three, subequal, almost spherical, and rather small, spermathecae, although all the rest of the specimens examined, including the other paratype, possessed the usual two oval, and rather large, spermathecae. No differences could be found in the genitalia, which are shown in figure 2. For these reasons *amazonius* is considered unquestionably a synonym of *phlebotomus.*

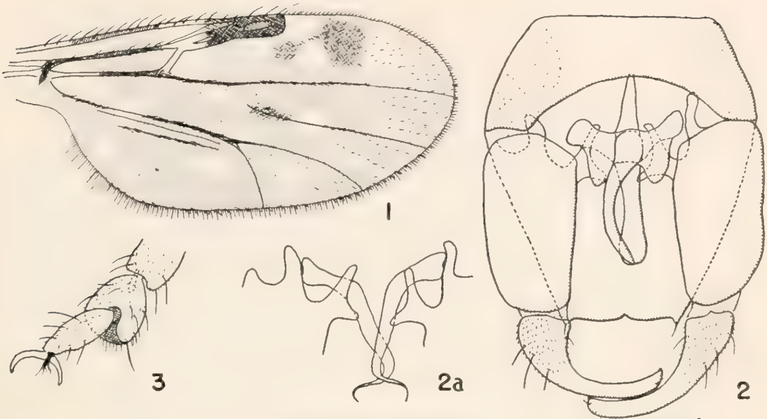
Culicoides willistoni Wirth and Blanton, new species (figures 3–6)

Female. Length 1.2 mm., wing 1.0 mm. by 0.5 mm.

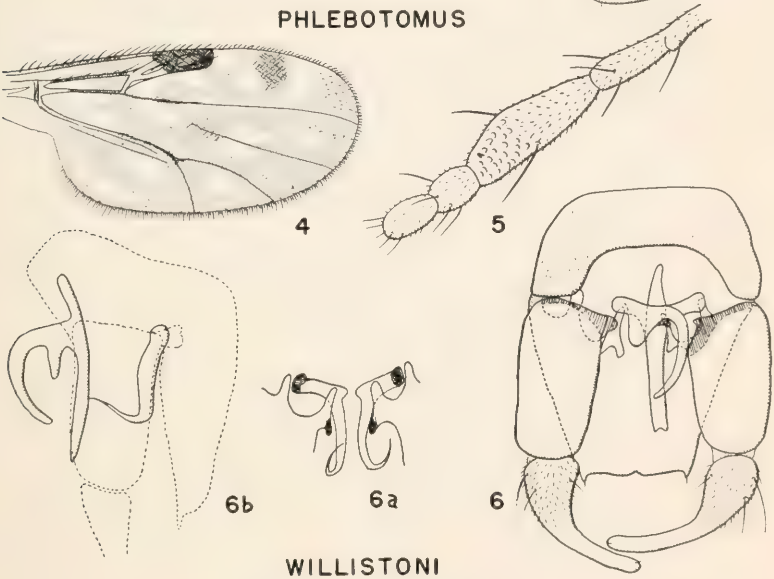
Head black, the vertex grayish pruinose; eyes contiguous, bare. Antennae with flagellar segments in proportion of 15 : 12 : 12 : 12 : 12 : 12 : 12 : 12 : 18 : 18 : 20 : 20 : 35; distal sensory tufts present on segments 3–10. Palpal segments in proportion of 10 : 25 : 30 : 10 : 10; third segment slightly swollen, without pit, the sensoria scattered over mesal side of distal half of segment (fig. 5).

Mesonotum densely bluish-gray pruinose, with prominent pattern of scattered brown dots, each dot surrounding the base of one of the stout, brown, mesonotal hairs; the brown areas often confluent on middle of anterior margin and on sublateral areas between the suture and wing bases. Scutellum bluish-gray pruinose, dark brown in middle; with four long hairs. Postscutellum and pleura blackish with variable grayish pollinosity. Legs brown; bases of femora pale and well defined, narrow, subapical pale rings on femora and sub-basal rings on tibiae; apices of hind tibiae pale; tarsi pale; fourth tarsal segments cordiform (fig. 3).

Wing (fig. 4) with anterior radial cells very narrow, the second short; macrotrichiae confined to a few at wing tip in apices of cells R_5 and M_2. Wing deeply infuscated with brownish, a blackish stigmal spot over second radial cell and distal half of first; large yellowish areas at wing base and over r-m crossvein to slightly behind base of anterior media. Prominent bluish-white spots as follows: in cell R_5, a small, round spot behind second radial cell, a second spot just past apex of costa on anterior margin, a third just past this one in middle of cell R_5 and a fourth, hourglass-shaped spot halfway between the third and wing tip with the anterior portion broadly meeting wing margin. Vein M_1 narowly bordered on most of its length to apex with light gray; an elongate white spot straddling middle of vein M_2; an elongate white spot on mediocubitus near wing base; an elongate white spot in cell M_2 just behind anterior media before the fork; a smaller oval spot just ahead of mediocubital fork;



PHLEBOTOMUS



WILLISTONI

Explanation of Figures

Culicoides phlebotomus. Fig. 1. Female wing (Fort Buchanan, Puerto Rico). 2. Male genitalia, ventral view, parameres drawn separately in 2a (Arraijan, Panama).

Culicoides willistoni. Fig. 3. Distal tarsal segments of female, showing cordate fourth segment. 4. Female wings. 5. Female palpus. 6. Male genitalia, ventral view. 6a. Parameres drawn separately. 6b. Lateral view to show details of aedeagus and parameres.

small, rounded, white spots well back from wing margin in apices of cells M_1, M_2 and M_4; anal cell with an elongate white spot just behind mediocubital fork and a diffuse, narrow streak along wing margin in basal half of cell. Halteres white, the stems brownish.

Abdomen dark brown, narrow apices of tergites with pale gray margins. Spermathecae two, slightly oval to pear-shaped, subequal, the bases of the ducts sclerotized a very short distance; rudimentary third spermatheca and ring present as usual.

Male. Similar to the female but smaller, with the usual sexual differences; antennal plumes yellowish, longer than in *phlebotomus.* Genitalia (fig. 6): Ninth sternite with shallow, rounded mesal excavation; ninth tergite tapered, with very short apicolateral processes. Basistyles with ventral roots strongly constricted at bases, the apices broadly expanded, boathook-shaped; dorsal roots well developed, slender; dististyles strongly bent a third of way to apices, the latter more slender than in *phlebotomus.* Aedeagus with short, broad, transverse basal arms, a short, stout, pointed median process projecting anteriorly from between them; posterior margins of basal arms with short, platelike expansions; the aedeagus bearing posteriorly a straight, spatulate, distally truncated, dorsal blade, with a strong, ventrally curved process arising from the base with its distally pointed apex curving towards the dorsal blade and about two thirds as long. (In *phlebotomus* the ventral process is as long as the dorsal and is more strongly curved, with its apex often passing behind to the dorsal side of the broader, more spatulate, dorsal blade (fig. 2).) Parameres with bases abruptly bent and bearing strong knobs, each with a distinct triangular lobe on inner side at base of stem, then slightly narrowed and bent outward a short distance, then abruptly bent ventrad with slender, simple, pointed apex.

Holotype ♀, *allotype,* Rio Hato, Coclé Province, PANAMA, January 15, 1952, F. S. Blanton (light trap) (Type No. 61630, U.S.N.M.).

Paratypes: 27 ♂♂, 47 ♀♀, same data as type; 6 males, 20 females, Palm Beach near San Carlos, Panama Province, Panama, September 17, 1952, F. S. Blanton (light trap); 2 ♂♂, 20 ♀♀, Puerto de Chorrera, Panama Province, Panama, September 9, 1952, F. S. Blanton (light trap).

This species is very closely related to *phlebotomus*, with very similar habitus, general color and type of wing markings, the same cordate fourth tarsal segments and palpal structure, and almost identical genitalia. In *phlebotomus*, however, the mesonotum is uniformly bluish-gray pruinose, without the punctiform brown dots, but occasionally with suffuse, yellowish brown sublateral bands; the legs are uniformly yellowish brown with the pale bands hardly distinguishable; the whitish wing markings are not so extensive, particularly in cell R_5 where the small round spot behind the second radial cell often disappears entirely and the third (see above) round spot usually lies directly behind the (second) one at the end of the costa, and there are differences as pointed out above in details of the male genitalia. Because of the punctiform mesonotal pattern and the similarity of the wing markings in cell R_5, *willistoni* can easily be confused with *furens* (Poey), which also occurs along Neotropical seacoasts. However, *furens* can be quickly separated by the yellowish color of the pale wing spots, it lacks the pale spot straddling the middle of vein M_2, the distal pale spot in cell M_1 extends narrowly to the wing margin and there are two pale spots distally in the anal cell. In *furens* there are also many structural characters different from those of the *phlebotomus* group.

We wish to dedicate this species to the memory of Samuel W. Williston, pioneer American dipterist, whose work on the Central American fauna remains as an American classic.

LITERATURE CITED

BARBOSA, F. A. S. 1947. *Culicoides* (Diptera: Heleidae) da Região Neotrópica. An. Soc. Biol. Pernambuco 7: 3–30.

COSTA LIMA, A. DA. 1937. Chave das especies de *Culicoides* da Região Neotropica (Diptera: Ceratopogonidae). Mem. Inst. Oswaldo Cruz 32: 411–422.

HOFFMAN, W. A. 1925. A review of the species of *Culicoides* of North and Central America and the West Indies. Amer. Jour. Hyg. 5: 274–301, 2 plates.

Macfie, J. W. S. 1935. Ceratopogonidae (Dipt.) from the River Amazon. Stylops 4: 49–56.

——. 1948. Some species of *Culicoides* (Diptera, Ceratopogonidae) from the State of Chiapas, Mexico. Ann. Trop. Med. Parasit. 42: 67–87.

The Identity of the Milliped Genus Camptomorpha Silvestri (Polydesmida: Chelodesmidae)

By Richard L. Hoffman, Blacksburg, Virginia

In the years between 1895 and 1900, a large number of Neotropical diplopods were described by Signor F. Silvestri, chiefly in a series of short papers appearing in the *Bollettino dei Musei di Zoologia ed Anatomia comparata della Reale Università di Torino* (hereinafter cited as *Boll. Mus. Torino*). Although most of his colleagues and successors largely ignored or discredited Silvestri's work, it is undeniable that his illustrations were usually very good, and his descriptions succinct, though brief.

The recent acquisition of one of the early Silvestri papers reveals that in certain milliped groups a great deal of confusion exists which may be attributed to faulty treatment of his genera and species by certain prominent workers. The genus *Camptomorpha* affords one such instance. In the most recent manual of the polydesmoid forms (Das Tierreich, 69, 1938), Attems has associated the name with an entirely different group of millipeds from that to which Silvestri originally gave it, drawing his concept of the genus from the erroneously placed species! In addition, the true *Camptomorpha* has acquired two synonyms, and its species are widely scattered through the pages of the Attems work cited above.

The purpose of the present paper is to demonstrate the nature of the type species of the genus (as readily observable from the original description); to define the genus on the basis of gonopod characters, and bring together for the first time the species properly referable to it; and to summarize the nomenclatorial history of the group.

Genus **Camptomorpha** Silvestri

Camptomorpha Silvestri, 1897, Boll. Mus. Torino, vol. 12, nr. 305, p. 10 (type, *C. dorsalis* Silvestri).

Phantasmodesmus Verhoeff, 1927, *in:* Bronn, Klass. u. Ordn. des Tierreichs, vol. 5, pt. 2, no. 2, p. 509 (type, *Leptodesmus pulvillatus* Attems).

Eucampesmus Chamberlin, 1941, Bull. Amer. Mus. Nat. Hist., vol. 78, p. 489 (type, *E. oreites* Chamberlin).

Leptodesmus subg. *Leptodesmus* Attems, 1938, Das Terreich, lief. 69, pp. 12, 13 (in part).

Leptodesmus subg. *Pseudoleptodesmus* Attems, 1938, Das Tierreich, lief. 69, p. 39 (in part).

Diagnosis. Chelodesmoid diplopods characterized particularly by the shape of the male gonopod. The telopodite is composed of three distinct elements: two large laminate prefemoral processes of nearly equal size, and a much smaller, simple, sickle-shaped solenomerite located between them. This arrangement is unique in the family.

Dorsum smooth; lateral carinae small, their margins generally even, the pores in a swelling near the posterior corner; tibial projections present. Medium sized species (30–40 mm in length).

Distribution. Eastern Cordilleran region in Ecuador, Peru, and western Brasil. One species also from eastern Brasil (Para).

Synonymy. This genus was proposed for the reception of two Ecuadoran species, *dorsalis* and *perproxima*, similar to each other and differing from other forms known to Silvestri in the nature of the male gonopods. These appendages were figured in five drawings, showing them (1) in situ, their coxae attached, and (2) individually, with one of the prefemoral processes removed to show the ordinarily nearly concealed solenomerite. On seeing these drawings, my immediate reaction was that a species of "Phantasmodesmus" was represented. Consultation of the legend showed that the milliped in question was the type species of *Camptomorpha!* I have prepared a copy of Silvestri's figure 29, here reproduced as a line drawing (fig. 1). Comparison of it with the figures illustrating the species listed below will show beyond doubt they are all species of *Camptomorpha.*

Apparently unaware of Silvestri's paper, Verhoeff proposed the name *Phantasmodesmus* in 1927 for *Leptodesmus pulvillatus* Attems, an upper Amazonian species which Verhoeff correctly felt was not congeneric with the type species of *Leptodesmus.* Until acquiring the Silvestri paper, I had been using Verhoeff's name for this genus.

In 1938, the entire group of "leptodesmoid" millipeds was treated by Attems in a most useful (although somewhat unreliable) compilation. In this work, Attems included a great diversity of unrelated species in the genus *Leptodesmus,* which was divided into four subgenera. This division, based upon the shape of the gonopod coxa, and the presence or absence of coxal spurs, is unquestionably one of the most artificial and indefensible arrangements ever proposed in diplopod systematics. It has already been refuted by Schubart, who has rearranged the members of the group into sections based upon the general appearance of the entire appendage. Attems had placed *pulvillatus* and *papillosus* in the subgenus *Leptodesmus,* and *cordilleranus* in *Pseudoleptodesmus.* His account of *Camptomorpha* on pages 69–74 is incorrect inasmuch as his concept of the genus was based upon species which are not congeneric with *dorsalis.* These five species, not even homogeneous within themselves, will have to be reallocated in the future.

Most recently, Chamberlin has proposed a new generic name—*Eucampesmus*—for a species from northeastern Peru which is obviously only a form of *Camptomorpha.*

Since only a few of the known species have had the gonopods illustrated from the same aspect, it is difficult to make accurate comparisons or to prepare a key for their discrimination at this time. It may be commented in passing, however, that *cordilleranus* appears only to be a synonym of *dorsalis,* a relationship which can be verified by a re-examination of the type specimen of the latter. Two subgeneric groups may be distinguished by the gonopod structure. In one, including *dorsalis, perproxima, papillosus,* and *cordilleranus,* the prefemoral processes are simply laminate with uninterrupted margins; in the second, which numbers *pulvillatus, oreites,* and *digitatus,* the prefemoral processes are armed with a variable number of slender branches or spurs. It may become useful at some future time to revive the name *Phantasmodesmus* for this ensemble (the species of which are further distinct in their lowland habitat is contrasted with the strictly Andine *heimat* of the other four) but for the time being there seems to be no particular need for such action.

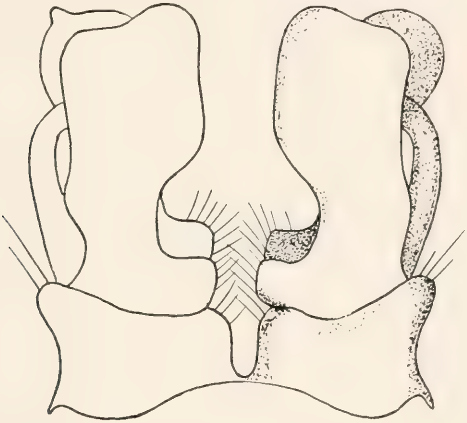


Fig. 1. *Camptomorpha dorsalis* Silvestri. Male gonopods as seen in situ, redrawn from fig. 29 of the paper cited in the text.

Following is a list of the species of *Camptomorpha,* arranged chronologically in order of the date of their description:

C. dorsalis Silvestri, 1897, Boll. Mus. Torino, vol. 12, no. 305, p. 10, figs. 29–31. Ecuador: San Jose.

C. perproxima Silvestri, 1897, Boll. Mus. Torino, vol. 12, no. 305, p. 11, figs. 32, 33. Ecuador: Valle del Zamorra.

C. pulvillatus (Attems), 1898, Denks. Akad. Wien, vol. 67, p. 391, figs. 132, 133. Brasil: State of Amazonas, Sao Paulo de Olivenza.

C. papillosus (Attems), 1931, Zoologica (Stuttgart), vol. 30, lief. 3–4, p. 10, figs. 1–4. Ecuador: Sabanilla, on the east slope of the Cordilleras.

C. cordilleranus (Attems), 1931, Zoologica (Stuttgart), vol.

30, lief. 3–4, p. 28, figs. 40–42. Ecuador: Sabanilla, on the east slope of the Cordilleras.

C. oreites (Chamberlin), 1941, Bull. Amer. Mus. Nat. Hist., vol. 78, p. 489, figs. 97–100. Peru: Department of Loreto, Contayo Hills, Rio Tapiche.

C. digitatus (Schubart), 1947, Bol. Mus. Nac. (Brasil), Zool., no. 82, p. 43, figs. 42, 43. Brasil: State of Para, Aura.

Finally, a species described as *Pseudoleptodesmus tricuspis* by Attems in 1931 (Zool., vol. 30, p. 27) appears to be closely related to *Camptomorpha,* and might well be referred to this group. In *tricuspis* the prefemoral processes are long and slender, and the inner one bears a short upright spur at its base.

A Note on a Subgeneric Name in the Saturniidae (Lepidoptera)

By Charles D. Michener, University of Kansas, Lawrence

In two recent papers (Michener, 1949, New genera and subgenera of Saturniidae, *Jour. Kansas Ent. Soc.,* vol. 22, pp. 142–147; and 1952, The Saturniidae (Lepidoptera) of the Western Hemisphere—morphology, phylogeny, and classification, *Bull. Amer. Mus. Nat. Hist.,* vol. 98, pp. 335–502) *lapsus calami* appear in the citation of the type species of *Ceratesa* Michener, 1949, a subgenus of the citheroniine genus *Adelowalkeria* Travassos. A letter was omitted from the spelling of the specific name, and it was credited to the wrong author. In order to correct the matter formally the following revision is presented:

Ceratesa Michener

Type species: *Adelocephala hemirhodia* Rothschild.

This subgenus differs from its relatives by the strong apical spine present on each fore and middle tibia as well as by numerous other characters as detailed in the 1949 and 1952 papers cited above.

Samuel Nicholson Rhoads

Samuel Nicholson Rhoads died on Saturday, December 27, 1952, in Camden County Hospital, Lakeland, New Jersey. He had been an invalid for the past twenty-five years and until recently was a patient in a private hospital at Willow Grove, Pennsylvania.

He was born in Philadelphia on April 30, 1862, and became a member of the Academy of Natural Sciences of Philadelphia in 1891, a life member in 1941. His interests were chiefly in birds and mammals on which he published from 1892 to 1902. Perhaps his best known work is "The Mammals of Pennsylvania and New Jersey. A biographic and descriptive account of the furred animals of land and sea, both living and extinct, known to have existed in these States. Privately published, Philadelphia, 1903."

He made collections of other groups of animals. In 1899 he was in Mexico; the Odonata which he obtained there were brought by Mr. F. D. Godman, of London, for the Biologia Centrali-Americana. Among them was a species described in the Neuroptera volume of that series as *Argia rhoadsi.* The Orthoptera collected by him in Mexico were secured by J. A. G. Rehn, who described from that series *Sinaloa brevispinis* and *Pristoceuthophilus rhoadsi;* this Orthoptera material is now in the collection of the Philadelphia Academy. The Academy has also Odonata from New Jersey, Philadelphia County, Delaware and Ecuador gathered by Rhoads in 1899, 1903 and 1911.

From 1902 on for twenty years or so Rhoads maintained the "Franklin Book Shop," most of that time at 920 Walnut Street, Philadelphia, where he dealt in volumes chiefly of natural history character.

(We are indebted to an obituary in the *Philadelphia Inquirer* of December 31, 1952, for some personal data on Mr. Rhoads.)

P. P. C., J. A. G. R.

The Type of Forficula Rehni (Dermaptera)

By James A. G. Rehn, *Academy of Natural Sciences of Philadelphia*

In a recent note [1] Dr. Malcolm Burr described as a new species, which he called *Forticula rehni,* the insect which had been recorded as *Forficula rodziankoi* Semenov, from certain localities in Kenya, East Africa, as well as in the lake region of Central Africa. Dr. Burr brought out the fact that true *rodzianoki* Semenov [2] is a very different thing, and that the material recorded as it by himself in 1911,[3] by Borelli in 1915,[4] and by Rehn in 1925 [5] and 1936[6] represents his new *rehni,* which he regards as nearer the palearctic *F. tomis* (Kolenati) than it is to *rodzainkoi,* which was described from Harrar, Abyssinia.

In his description of *rehni* Burr unfortunately failed to indicate a single type for the species, but his sole figure is a photograph of a male specimen from Kijabe, Kenya, collected by Alluaud and Jeannel, reported as *rodzianoki* by Borelli, and now in the collection of the Academy of Natural Sciences of Philadelphia, which acquired it in exchange from the Paris Museum. A photograph of this specimen had been supplied to Dr. Burr by the author for comparison with Anatolian specimens of *F. tomis,* and he used this for comparison with illustrations of topotypic material of *rodzianoki,* and of *tomis* from the Ukraine, the Caucasus and Turkey, and of *F. sjostedti* Burr from Kilimanjaro, East Africa. In consequence, in the absence of other indication, the figured specimen becomes the holotype of *Forficula rehni* Burr (Academy of Natural Sciences of Philadelphia, type no. 5772).

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[1] Proc. Royal Entom. Soc. London, (B), 21, p. 166, pl. 1, fig. 2, (1952).

[2] Revue Russe d'Entomologie, I, p. 48, (1901). [♂; Harrar, Abyssinia.]

[3] Dermaptera. Wiss. Ergebn. Deutsch. Zent.-Afr. Exped. 1907–1908, III, Zool. 1, p. 459, (1911). [Records from Frangi (location ?), Ishangi, Ninangongo, Kissenji, Bugoie Forest, and foot of west side of and 2,500 meters elevation on Mt. Ruwenzori, Belgian Congo.]

[4] In Alluaud and Jeannel, Voy. Afr. Orientale (1911–1912). Résultats scientifiques. Insectes Orthoptères. I. Dermaptera, p. 14, (1915). [Records from Kijabe, the Kikuyu Escarpment and Wambogo, Kenya.]

[5] Arkiv för Zoologi, 17A, (15), p. 2, (1925). [Records from Kijabe and Kikuyu Escarpment, Kenya.]

[6] Proc. Acad. Nat. Sci. Phila., 88, p. 514, figs. 4 and 5, (1936). [Records from Kijabe and Kikuyu Escarpment, Kenya.]

Current Entomological Literature

Compiled by VENIA T. PHILLIPS, Librarian

Academy of Natural Sciences of Philadelphia

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania pertaining to entomology, including all arthropods except Crustacea. Coverage will be world-wide as regards major contributions to systematics as well as for all papers on morphology, physiology, embryology, etc. In addition, for species from the Americas and the Pacific (Nearctic, Neotropical and Polynesian regions) all minor contributions to taxonomy, distribution, etc., will also be recorded.

This list gives references of the year 1953 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in Entomological News are not listed.

General—Busvine, J. R.—Forms of insecticide-resistance in houseflies and body lice. [98] 171: 118–19. **Costa Lima, A. da.**—Anotações ao 6.° tomo de "Insetos do Brasil." [121] 50: 243–48, 1952. **DeCoursey, J. D.**—A method of clearing the chorion of Aedes sollicitans (Walker) eggs and preliminary observations on their embryonic development. [52] 45: 625–32, ill., 1952. **Dutt, N.**—On the forecasting of epidemic outbreaks of the major insect pests of jute. [155] 5: 71–81, 1952. **Fredeen, F. J. H. and others.**—Mass tagging of black flies (Diptera: Simuliidae) with radiophosphorus. [44] 31: 1–15, ill. **Glynne-Williams, J. and J. Hobart.**—Studies on the crevice fauna of a selected shore in Anglesey. [156] 122: 797–824, ill., 1952. **Gray, H. E.**—Insects observed at sea. [76] 45: 1081, 1952. **Gurney, A. B.**—Approved additions to Common Name List, and one proposed change. [76] 45: 1114, 1952. **Hambleton, E. J.**—Entomology in the point four program. [76] 45: 1103–08, 1952. **Hartzell, A.**—Bioassay of organic insecticides in processed foods. [76] 45: 1102, 1952. **Hustich, I.**—The recent climatic fluctuations in Finland and its consequences. A symposium (insects, pp. 60–68). Fennia v. 75. Geographical Soc. of Finland, Helsinki, 1952, 128 pp. (Review by D. S. Farner [52] 45: 542). **Illies, J.**—Weisst du Wieviel . . . ? Eine Betrachtung über Zahl und Arten der Tiere. [Kosmos] 49: 87–90, ill. **Jones, G. D. G. and W. D. E. Thomas.**—Contamination of nectar with the systematic insecticide "Schradan." (Honey bees.) [98] 171: 263. **Kaisila, J.**—Insects from arctic mountain snows. [Suomen. Hyönteist. Aikak. (Ann. Ent. Fenn.)] 18: 8–24, ill., 1952. **Kempthorne, O.**—The design and analysis of experiments. N. Y., Wiley; London, Chapman & Hall, 1952. 631 pp. $8.50. (Review by F. M. Wadley [52] 45: 612.) **Knipe, F. W. and H. Frings.**—An improved cage for flies. [76] 45: 1099, 1952. **Knowlton, G. F. and E. H. Kardos.**—Celery field insects of Utah. (Abstract.) [Proc. Utah Acad. Sci.] 28: 116, 1952. **Knowlton, G. F. and G. P. Taylor.**—Utah insects—occurrence and notes. (Abstract.) [Proc. Utah Acad. Sci.] 29: 49–50, 1952. **Kurtz, O. L., N. A. Carson and H. C. Van Dame.**—Identification of cereal insects in stored grain by their mandible characteristics. [Journ. Assoc. Off. Agr. Chemists] 35: 817–26, ill., 1952. **Legay, J.-M.**—Sur une méthode d'étude quantitative de la prise de nourriture chez le ver à soie. (Lepid.) [2] 236: 326–28. **Martorell, L. F. and J. Adsuar.**—Insects associated with papaya virus diseases in the Antilles and Florida. [J. Agr. Univ. Puerto Rico] 36: 319–29, 1952. **Nordman, A.**—Insekternas uppträdande under den i klimatologiskt hänseende avvikande sommaren 1951. [103] 32: 158–64, 1952. **Osborn, H.**—A brief history of entomology. Spahr and Glenn Co., Columbus, Ohio, 1952. 303 pp., 58 pls. of portraits. $4.50. (Review by M. T. J. [52] 45: 604.) **Rees, D. M. and J. V. Smith.**—Preliminary report on the control of the biting gnat in north Salt Lake City, Utah. (Abstract.) [Proc. Utah Acad. Sci.] 27: 63. **Roth, A. R. and R. A. Hoffman.**—A new method of tagging insects with P^{32}. [76] 45: 1091, 1952. **Schatz, L.**—The development and differentiation of arthropod procuticle: staining. [53] 45: 678–86, ill., 1952. **Smith, K. D. and G. B. Popov.**—On birds attacking desert locust swarms in Eritrea. [58] 86: 3–7. **Southgate, B. J.**—A convenient method for degreasing insect specimens. [58] 86: 10. **Tucker, R. W. E.**—The insects of Barbados. [J. Agr. Univ. Puerto Rico] 36: 330–63, 1952. **Vappula, N. A.**—Finnish entomological literature published in 1950 including economic entomology and control of insect pests. [Suomen hyönteist. Aikak. (Ann. Ent. Fenn.)] 18: no. 1a, 1–17, 1952.

BIOGRAPHIES, OBITUARIES—Bishopp, Fred C.—USDA entomologists honored. (Port.) [76] 45: 1123, 1952. **Blair, Kenneth Gloyne,** 1882–1952. (Obit.) by E. B. Britton [58] 86: 25. **Bradley, James Chester.**—(Biographical sketch.) [76] 45: 1114–15, 1952. **Caesar, Lawson,** 1870–1952.—(Obit. with port.) by A. W. Baker. [76] 45: 1113–14, 1952. **Cook, Melville Thurston,** 1869–1952.—(Obit.) by G. Walcott. [76] 45: 1112–13, 1952. **Federley, Harry,** 1879–1951.—In memoriam, by R. Frey. [103] 32: 166, 1952. **Fernald, Henry Torsey,** 1866–1952.—(Obit. with port.) by C. P. Alexander. [76] 45: 1111–12, 1952. **Henderson, William Williams,** 1879–1944.—Biography with bibl. by C. J. Sorenson, E. J. Gardner and D. M. Hammond. [Proc. Utah Acad. Sci.] 27: 9–11, 1952. **Parker, J. R.**—Distinguished Service Award by the Dept. of Agriculture. (Port.) [76] 45: 1123, 1952. **Phillips, Everett Franklin,** 1878–1951.—(Obit. with port.) by J. I. Hambleton. [76] 45: 1124, 1952. **Saalas, Uunio.**—Professori Unnio Saalas 70-vuotias. (In Finnish & in English.) [Suom. Hyönteist. Aikak. (Ann. Ent. Fenn.)] 18: 1–4, 1952. (Biogr. & port.)

ANATOMY, PHYSIOLOGY, MEDICAL—Arthur, D. R.—Haller's organ of ticks. [58] 86: 23–24. **Bird, M. J. and O. G. Fahmy.**—Cytogenetic analysis of the action of carcinogens and tumour inhibitors in Drosophila melanogaster. I. 1:2, 3:4-diepozybutane. [127] 140: 556–78, ill. **Bole-Gowda, B. N.**—Studies on the chromosomes and the sex-determining mechanism in four hunting spiders (Sparassidae). [155] 5: 51–70, ill., 1952. **Cochran, D. G.**—Chromosomal and cytoplasmic factors in transmission of DDT resistance in the German cockroach. [76] 45: 997–1001, 1952. **Dalmat, H .T. and C. L. Gibson.**—A study of flight range and longevity of blackflies (Simuliidae) infected with Onchocerca volvulus. [52] 45: 605–12, 1952. **Dennell, R. and S. R. A. Malek.**—Homology of the layers of the epicuticle of insects. [98] 171: 298–99. **Dresden, D. and F. J. Oppenoorth.**—Residual effect, skin application and injection of γ-hexachlorocyclohexane in Drosophila melanogaster. [40] 43: 581–86. **Dupont-Raabe, M.**—Contribution à l'étude du role endocrine du cerveau et notamment de la pars intercerebrals chez les phasmides. [24] 89: 128–38, 1952. Substances chromactives de crustacés et d'insectes activité réciproque, répartition, différences qualitatices. [24] 89: 102–12, 1952. **Fingerman, M. and F. A. Brown, Jr.**—Color discrimination and physiological duplicity of Drosophila vision. [113] 36: 59–67. **Green, M. M.**—The beadex locus in Drosophila melanogaster: on the nature of the mutants Bx^r and Bx^1. [Genetics] 38: 91–105, ill. **Huffaker, C. B. and C. E. Kennett.**—Ecological tests on Chrysolina gemellata (Rossi) and C. hyperici Forst. in the biological control of Klamath weed. [76] 45: 1061–64, 1952. **Jackson, C. H. N.**—Seasonal variations in the mean size of tsetse flies. [40] 43: 703–06. **King, R. C.**—Reduction in productivity and recessive lethal mutation following X-irradiation of female Drosophila melanogaster. [15] 86: 391–98, 1952. **Mukerji, S. and S. N. Chatterjee.**—Permeability of insect cuticle to aqueous stains and vulnerability to insecticides. [98] 171: 119–20. **Ringdahl, O.**—Smaplock ur kullabergs flugfauna. [Fauna och Flora, Lund] 1952: 234–44, ill. **Rizki, M. T. M.**—Pattern of pigmentation associated with Drosophila lethals. [15] 86: 409–12, ill., 1952. **Roan, C. C.**—Reactions of oriental fruit fly to high temperatures and various relative humidities. [76] 45: 920–25, 1952. **Sippell, W. L. and A. W. A. Brown.**—Studies of the responses of the female Aëdes mosquito. Part V. The role of visual factors. [40] 43: 567–74, ill. **Sotavalta, Olavi.**—On the difference and variation of the wing-stroke frequency in wing mutants of Drosophila melanogaster Mg. [Suomen Hyönteist. Aikak. (Ann. Ent. Fenn.)] 18: 57–64, 1952. **Stevenson, R. and J. H. St. Clair.**—Temperature as a factor in size and activity of wild populations of Drosophila. [147] 28: 43–48. **Sussman, A. S.**—Studies of an insect mycosis. V. Color changes accompanying parasitism in Platysamia cecropia. [52] 45: 638–44, ill., 1952. **Székessy, V.**—Funktionell-anatomische Untersuchungen am Insektenkopf. [Acta Biologica, Budapest] 3: 393–404, ill., 1952. **Tsao, C.-H. and A. G. Richards.**—Studies on arthropod cuticle. IX. Quantitative effects of diet, age, temperature and humidity on the cuticles of five representative species of insects. [52] 45: 585–99, 1952. **Wood, S. L.**—Observations on the homologies of the copulatory apparatus in male Coleoptera. [52] 45: 613–17, ill., 1952. **Yust, H. R.**—Visible reactions of California red scale in relation to resistance to fumigation with HCN. [76] 45: 985–87, 1952.

ARACHNIDA AND MYRIOPODA—Aragão, H. and F. da Fonseca.—Confirmação de Ixodes aragãoi Fonseca, 1935, de Ixodes amarali Fonseca, 1935, e lista das espécies do gênero Ixodes que ocorrem no Brasil (Acari, Ixodidae). [121] 50: 727–28, ill., 1952. **Arthur, D. R.**—The capitulum and feeding mechanism of Ixodes hexagonus Leach. II. [112] 42: 187–91, ill. The morphology of the British Prostriata with particular reference to Ixodes hexagonus Leach. II. [112] 42: 161–86, ill. **Berndt, W. L.**—The chicken mite attacking children. [76] 45: 1098, 1952. **Bole-Gowda, B. N.**—(See Anatomy.) **Causey, N. B.**—New records of millipeds from southern Ontario. [Can. Field Nat.] 66: 145, 1952. **Chamberlin, R. V.**—Some American polydesmid millipeds in the collection of the Chicago Museum of Natural History. [53] 45: 553–84, ill., 1952 (*). **Fonseca, F. da and H. Aragão.**—Considerações sôbre a nomenclatura de algumas espécies do gênero Amblyomma do Brasil e países limítrofes (Acari, Ixodidae). [121] 50: 729–31, 1952. Uma nova espécie do gênero Amblyomma e uma nova espécie do gênero Ixodes (Acari, Ixodidae). [121] 50: 713–26, ill., 1952. **Grandjean, F.**—Le morcellement secondaire des tarses de Tarsolarkus sp. (Acarina). [24] 89: 113–23, ill., 1952. **Hammen, L. van der.**—The Oribatei (Acari) of the Netherlands. [Zoologische Verhandelingen (Rijksmuseum, Leiden)] no. 17: 1–139 pp., ill., 1952. **Jameson, E. W., Jr.**—Euphaemogamasus keegani, new species, a parasitic mite from western North America (Acarina: Laelaptidae). [52] 45: 600–04, ill., 1952. **Koutz, F. R., D. M. Chamberlain and C. R. Cole.**—Pneumonyssus caninum in the nasal cavity and paranasal sinuses. A report of its occurrence in eight dogs. [Journ. Amer. Vet. Med. Assn.] 122: 106–09, ill. **Mantovani, A. and P. Benazzi.**—The isolation of Coxiella burnetii from Rhipicephalus sanguineus on naturally infected dogs. *Ibid.* 117–18. **Mihelčič, F.**—Contribucion al estudio de la ecologia de los tardigrados que habitan suelos de humus (II). [Anales Edafologia y Fis. Veg.] 9: 651–80, 1952. **Philip, C. B.**—Tick talk. [Sci. Monthly] 76: 77–84, ill. **Radford, C. D.**—The mites (Acarina: Analgesidae) living on or in the feathers of birds. [112] 42: 199–230. **Roewer, C. F.**—Einige Phalangiiden aus dem Vereinigten Staaten von Nord-Amerika. [159] 149: 267–73, ill., 1952. **Schubart, O.**—Leptodesmidae brasileiras. I. Três gêneros novos, Goyazodesmus, Rupidesmus e Thaumatodesmus (Myriop.). [117] 12: 447–54, 1952. **Strenzke, K.**—Untersuchungen über die Tiergemeinschaften des Bodens: die Oribatiden und ihre Synusien in den Böden

Norddeutschlands. No. 2 (Acarina, Oribatidae). [Zoologica, Stuttgart] 37: 80–172, 1952. **Turk, F. A.**—A synonymic catalogue of British Acari: pt. 1. [19] ser. 12, 6: 1–26. **Wolfenbarger, K. A.**—Systematic and biological studies on North American chiggers of the genus Trombicula, subgenus Eutrombicula (Acarina, Thrombiculidae). [52] 45: 645–77, ill., 1952 (k).

SMALLER ORDERS—Beck, D. E. and D. M. Allred.—Further distributional data on Utah Siphonaptera. (Abstract.) [Proc. Utah Acad. Sci.] 28: 113–14, 1952. **Costa-Lima and Costa-Leite.**—Psocoptera. (See Diptera.) **Goto, H. E.**—Lepidocyrtus christianseni, sp. n. (Collembola: Entomobryidae) from North America. [19] ser. 12, 6: 30–32, ill. **Remy, A.**—Palpigrades de l'Ile de la Réunion. [Inst. Sci. Madagascar, Mém. sér. A] 7: 69–79, ill., 1952. **Valle, K. J.**—Die Verbreitungsverhältnisse der ostfennoskandischen Odonaten (Zur Kenntnis der Odonatenfauna Finnlands VI). [Acta Ent. Fennica] 10: 1–87, ill., 1952. **Wereck, F. L.**—Contribuição ao conhecimento dos Anopluros. III. O gênero Eulinognathus. [117] 12: 421–31, ill., 1952.

ORTHOPTERA—Cochran, D. G.—(See Anatomy.) **Dupont-Raabe, M.**—(See Anatomy.) **Durand, M.-C.**—Évolution de la chromatine dans la spermatogenèse de Gryllus bimaculatus; étude critique de quelques réactions histochimiques des acides nucléiques. [39] 86: 381–403, 1952. **Lawson, F. A.**—Structural features of cockroach egg capsules. III. The ootheca of Euryotis floridana (Blattidae). [147] 28: 28–33, ill. **Metcalf, Z. P.**—Two genera of Tettigellidae proposed by Melichar. [106] 53: 47–50, ill. (*). **Smith, K. D. and G. B. Popov.**—(See General.) **Voy, A.**—Régénération et croissance des pattes atypiques chez le phasme (Carausius morosus Br.). [39] 86: 449–70, ill., 1952. **Waloff, Z.**—Flight in desert locusts in relation to humidity. [40] 43: 575–80.

HEMIPTERA—Al-Tikrity, A. B.—The biology of the boxelder bug in Cache Valley. (Abstract.) [Utah Acad. Sci., Proc.] 29: 47, 1952. **Barth, R.**—Estudos anatômicos e histológicos sôbre a subfamilia Triatominae (Reduviidae). (In Portuguese & English.) [121] 50: 69–196, ill., 1952. **China, W. E.**—A new subfamily of Microphysidae (West Indies). [19] ser. 12, 6: 67–74, ill. (*). **Costa Lima, A. da, C. A. Campos Seabra and C. R. Hathaway.**—Aditamento ao trabalho sôbre o gênero Apiomerus (Reduviidae). [121]

50: 265–70, ill., 1952 (*). **Drake, C. J. and L. Hoberlandt.**—A new genus and species of Saldidae from South America. [115] 59: 85–88, ill., 1952. **Essig, E. O. and F. Abernathy.**—The Aphis genus Periphyllus: a systematic, biological, and ecological study. Univ. California press, Berkeley, 1952. 166 pp., 43 figs. $3.50. (Review by M. T. J. [52] 45: 617, 1952.) **Feldman, A. E. and N. S. Bailey.**—The taxonomic value of the ovipositor in the New England species of the genus Corythucha (Tingidae). [115] 59: 96–104, ill., 1952. **Flanders, S. E.**—(See Hymenoptera.) **La Rivers, I.**—Two new naucorid bugs of the genus Ambrysus. [151] 103, no. 3311, 7 pp., ill. **Paine, J. and J. T. Legg.**—Transmission of hop mosaic by Phorodon humuli (Schrank). (Aphidae.) [98] 171: 263–64. **Yust, H. R.**—(See Anatomy.)

LEPIDOPTERA—Atwood, E. P.—Violet fancier (Argynnis cybele). [Nature Mag.] 46: 77–79, ill. **Barth, R.**—Estudos sôbre os órgãos odoríferos de alguns Hesperidae Brasileiros. (Repeated in German.) [121] 50: 423–556, ill., 1952. Os órgãos odoríferos masculinos de alguns Heliconiinae do Brasil. (Repeated in German.) [121] 50: 335–422, ill., 1952. **Bradley, J. D.**—Some important species of the genus Cryptophelebia Walsingham 1899, with descriptions of three new species (Olethreutidae). [40] 43: 679–89, ill. (S). **Burkhardt, C. C.**—Feeding and pupating habits of the fall armyworm in corn. [76] 45: 1035–37, 1952. **Costa Lima, A. da.**—Sôbre dois microlepidópteros (Tortricoidea, Grapholitidae). [121] 50: 249–58, ill., 1952 (*). Sôbre um noctuídeo pouco citado na literatura (Noctuidae). [121] 50: 259–64, ill., 1952. **Diakonoff, A.**—New Guinean microlepidoptera, I–II. [Ned. Akad. Wetens., Proc., ser. C] 55: 382–406, ill., 1952 (*k). **Fragoso, S. A.**—Gênero Cissura Walker, 1854 (Arctiidae). [117] 12: 411–16, ill., 1952. **Legay, J.-M.**—(See General.) **Lempke, B. J.**—Catalogus der Nederlandse macrolepidoptera. XI (conclusion.) [149] 95: 197–319, ill., 1952. **Mukerji, D. and S. N. Banerjee.**—The early embryonic stages of the silkworm, Bombyx mori, nistid yellow variety. [155] 5: 19–28, ill., 1952. **Okagaki, H.**—The situation of the genus Leptosia Hüebner in the supergeneric classification (Pieridae). [Ent. Rev. Japan] 6: 7–8, ill., 1952. **Sussman, A. S.**—(See Anatomy.) **Travassos, L.**—Contribuição ao conhecimento dos Arctiidae . XXX. Espécies do gênero Nelphe H. Schaeffer, 1855. [117] 12: 369–84, ill., 1952. **Williams,**

J. R.—The larvae and pupae of some important Lepidoptera. [40] 43: 691–701, ill.

DIPTERA—Arnoud, B.—Een interessante muggelarve Chaoborus crystallinus De Geer. [Natuurhist. Maandblad] 41: 53–58, ill., 1952. **Bailey, S. F. and R. M. Bohart.**—A mosquito survey and control program in Guam. [76] 45: 947–52, 1952. **Bird, M. J. and O. G. Fahmy.**—(See Anatomy.) **Bouvier, G.**—Notes sur les Tabanidés de la région de Campinas (Estado S. Paulo)—Brésil. [121] 50: 581–96, ill., 1952. **Chagnon, G.**—Études préliminaires sur les diptères du Québec. [Contrib. Institut de Biol., Univ. Montréal] 22, 36 pp., ill., 1952. **Costa Lima, A. da and I. da Costa Leite.**—Môscas dos gêneros Hexachaeta e Blepharoneura (Trypetidae). [121] 50: 297–334, ill., 1952 (*k). Um psocídeo da família Amphientomidae na América do Sul. [121] 50: 271–76, ill., 1952. **Dalmat, H. T. and C. L. Gibson.**—(See Anatomy.) **DeCoursey, J. D.**—(See General.) **Dresden, D. and F. J. Oppenoorth.**—(See Anatomy.) **Fairchild, G. B. and M. Hertig.**—Notes on the Phlebotomus of Panama. IX. Descriptions of seven new species. [52] 45: 505–28, ill., 1952. **Fingerman, M. and F. A. Brown, Jr.**—(See Anatomy.) **Fredeen, F. J. H. and others.**—(See General.) **Galindo, P., S. J. Carpenter and H. Trapido.**—The taxonomic status of the Aedes leucocelaenus complex with descriptions of two new forms (Culicidae). [52] 45: 529–42, ill., 1952. **Gardner, E. J. and G. Stott.**—Genes producing a maternal effect on tumorous head found in "Wild" populations of Drosophila melanogaster. (Abstract.) [Proc. Utah Acad. Sci.] 27: 67, 1952. **Green, M. M.**—(See Anatomy.) **Hildebrand, C. W.**—Morphological and ecological observations on the larvae of Therevidae. [153] 10: 355–57, 1952. **Horsfall, W. R., R. C. Miles and J. T. Sokatch.**—Eggs of floodwater mosquitoes. I. Species of Psorophora. [52] 45: 618–24, ill., 1952. **Jackson, C. H. N.**—(See Anatomy.) **James, M. T.**—The Diptera collected on the Cockerell and Hubbell expeditions to Honduras. Part II, Asilidae. [152] 43: 46–57, ill. (*). **Kahn, N. H.**—Oviposition and hatching in some species of Tabanidae. [52] 45: 550–52, ill., 1952. **Kessel, E. L.**—Rediscovery of Snow's two species of Protoclythia (Clythiidae). [153] 10: 359–61, 1952. **King, R. C.**—(See Anatomy.) **Knipe, F. W. and H. Frings.**—(See General.) **Knowlton, G. F. and L. E. Fronk.**—Some blood sucking Utah Diptera. (Abstract.) [Proc. Utah Acad. Sci.] 28: 112, 1952. ——

and W. J. Hansen.—Some Utah Tachinidae. (Abstract.) *Ibid.* 68, 1952. **Lane, J.**—Neotropical Tetragoneura (Mycetophilidae). [117] 12: 401–09, 1952. **Lewis, D. J.**—Simulium damnosum and its relation to onchocerciasis in the Anglo-Egyptian Sudan. [40] 43: 597–644, ill. **Malogolowkin, C.**—Notas sôbre Zygothrica dispar (Drosophilidae). [117] 12: 455–57, 1952. **Miles, M.**—Studies of British anthomyiid flies. [40] 43: 591–96, ill. **Nielsen, E. T. and A. T.**—Field observations on the habits of Aedes taeniorhynchus (Culicidae). [50] 34: 141–56, ill. **Nielsen, L. T.**—The biology and control of mountain mosquitoes in Utah. (Abstract.) [Proc. Utah Acad. Sci.] 27: 64, 1952. **Qutubuddin, M.**—The emergence and sex ratio of Culex fatigans Wied. (Culicidae) in laboratory experiments. [40] 43: 549–65. **Rees, D. M. and J. V. Smith.**—(See General.) **Repass, R. P.**—Laboratory colonization of Aedes triseriatus. [76] 45: 1076, 1952. **Ringdahl, O.**—(See Anatomy.) **Rizki, M. T. M.**—(See Anatomy.) **Roan, C. C.**—(See Anatomy.) **Schmitz, H.**—Neue Arten vom Stichillus und Borophaga aus U. S. A. (Phoridae). [Natuurhistorisch Maandblad] 41: 102–04, 1952. **Steyskal, G. C.**—Genus Pseudorichardia Hendel (Otitidae). [Occas. Papers Bernice P. Bishop Mus.] 21: 63–66, 1952 (*k).

COLEOPTERA—Bletchly, J. D.—A note on the prepupal stage and the external sex characters of the pupae of Anobium punctatum (Deg.) (Anobiidae). [40] 43: 587–90, ill. **Darlington, P. J.**—Notes on Brachyonychus Chd. (Carabidae, Panagaeini). [115] 59: 126–28, 1952. **Emden, F. I. van.**—On the taxonomy of Rhynchophora larvae: Adelognatha and Alophinae (Curculionidae). [156] 122: 651–795, ill., 1952. **Gilbert, E. E.**—The homologies of the male genitalia of Rhynchophora and allied Coleoptera. [52] 45: 633–37, ill., 1952. **Hope, J. A.**—A simple method for sexing the confused flour beetle. [98] 171: 265–66. **Huffaker, C. B. and C. E. Kennett.**—(See Anatomy.) **Jeannel, R.**—Psélaphides recueillis par N. Leleup au Congo Belge. IV—Faune de l'Itomwe et de la forêt du Rugege. [Ann. Musée Roy. du Congo Belge, Tervuren. Sér. in 8°. Sci. Zool.] 11: 1–295, ill., 1952 (*). **Juutinen, P.**—Eine Zuchtmethode für fichtenrindenbewohnende Käferlarven. [Suomen. Hyönteist. Aikak. (Ann. Ent. Fenn.)] 18: 41–46, 1952. **Kangas, E.**—Die Larve von Lepture maculicornis DeG. (Cerambycidae), nebst Erörterungen über die Biologie einiger Leptura-arten. *Ibid.* 75–80, ill.,

1952. **Knowlton, G. F. and D. McComb.**—Some Utah Elateridae and Scarabaeidae. (Abstract.) [Proc. Utah Acad. Sci.]27: 66, 1952. **McComb, D. and G. F. Knowlton.**—Some Utah Coleoptera belonging to minor families. (Abstract.) *Ibid.* 68, 1952. **Monros, F.**—Descripciones de Clytrinae americanas (Chrysomelidae). [117] 12: 349–62, ill., 1952. **Park, O., S. Auerbach and M. Wilson.**—Pselaphid beetles of an Illinois prairie: the population. [49] 23: 1–15, ill. **Théodorides, J.**—Les parasites et commensaux des Geotrupini (Scarabaeidae). [123] 13: 277–98, 1952. **Uhmann, E.**—Amerikanische "Hispinae" IV (Chrysomelidae). [Soc. Cubana Hist. Nat., Memorias] 21: 161–72, ill. **Van Leeuwen, E. R.**—Life history and habits of the chestnut weevils. [76] 45: 1089–91, 1952. **Wilcox, J. A.**—New species of Galerucinae and Alticinae with notes on other species (Chrysom.). [106] 53: 51–58, ill. **Wood, S. L.**—(See Anatomy.)

HYMENOPTERA—Bohart, G. E.—Native bees of Utah. (Abstract.) [Proc. Utah Acad. Sci.] 27: 69, 1952. **Brown, W. L.**—Composition of the ant tribe Typhlomyrmicini. [115] 59: 104, 1952. **Cole, A. C.**—A checklist of the ants (Formicidae) of the Great Smoky Mountains National Park, Tenn. [147] 28: 34–35. Studies of New Mexico ants (Formicidae). I–III. [147] 28: 81–85 (*). **De Haan, J. H. H.**—De blauwe houtbij, Xylocopa violacea (L.) Latr. "inheems" te Weert. [Natuurhistorisch Maandblad] 41: 97–102, ill., 1952. **Flanders, S. E.**—Biological observations on parasites of the black scale. [52] 45: 543–49, ill., 1952. **Jones, G. D. G. and W. D. E. Thomas.**—(See General.) **Kerrich, G. J.**—A review, and a revision in greater part, of the Cteniscini of the Old World (Ichneumonidae). [35] 2: 307–457, ill., 1952. **Krombein, K. V.**—Biological and taxonomic observations on the wasps in a coastal area of North Carolina (Aculeata). [153] 10: 257–341, 1952. **Ma, S. C.**—Observations on honey bee activity. (Abstract.) [Proc. Utah Acad. Sci.] 27: 64–5, 1952. **Miller, W. E.**—Biological notes on five hymenopterous parasites of pine bud and stem moths in Ohio. [106] 53: 59–63. **Salt, G.**—Trimorphism in the ichneumonid parasite Gelis corruptor. [116] 93: 453–86, ill., 1952. **Timberlake, P. H.**—A new name for the bee genus Ruiziella. [52] 45: 528. **Vecht, J. van der.**—A preliminary revision of the oriental species of the genus Ceratina (Apidae). [Zool. Verh. (Rijksmuseum, Leiden)] no. 16: 1–85, 1952 (*k). **Wheeler, G. C.**

and J.—The ant larvae of the myrmicine tribe Myrmicini. [115] 59: 105–25, ill., 1952. **Wilson, E. O.**—O complexo Solenopsis saevissima na America do Sul (Formicidae). (Also in English.) [121] 50: 49–68, ill., 1952. **Woodrow, A. W.**—Pollination of the red clover flower by the honey bee. [76] 45: 1028–29, 1952. **Zirngiebl, L.**—Ein bilateraler Zwitter der Blattwespe Tenthredo atra L. [Verein f. vaterl. Naturk. Württemberg, Jahreshefte] 107: 89–94, ill., 1952.

Reviews

THE GRASSHOPPERS AND LOCUSTS (ACRIDOIDEA) OF AUSTRALIA. Volume I, Families Tetrigidae and Eumastacidae. By James A. G. Rehn. 326 pp., 21 pls. (287 figs.) Commonwealth Scientific and Industrial Research Organization, Australia. Melborne, Oct. 28, 1952.

Near the close of World War II officials of the Commonwealth Scientific and Industrial Research Organization, of Australia, requested J. A. G. Rehn, of the Academy of Natural Sciences of Philadelphia, to undertake a monographic study of the grasshoppers of that continent. For some years workers dealing with the ecology, behavior, and control of Australian species had been handicapped by the lack of names for a large number of undescribed species, also by several fundamental shortcomings in the taxonomic work of Yngve Sjöstedt, the late Swedish orthopterist who had published more extensively than anyone else on Australian Acridoidea. A very close and helpful cooperative arrangement was made with Mr. Rehn, by which partially sorted series of genera were sent to Philadelphia in several lots, to minimize the risk of loss in shipment and to reduce the routine handling of specimens by Mr. Rehn. At the same time full geographic and other pertinent notes were supplied. For the development of this cooperation and the incentive leading to this highly successful undertaking much credit is due K. H. L. Key, a Senior Research Officer (CSIRO) in Canberra.

The present volume covers the Tetrigidae (grouse or pygmy locusts) and Eumastacidae (monkey grasshoppers, which in the United States are represented by only a few southwestern species). In Australia 37 species and subspecies of the former are known, and 43 of the latter. Four genera and 19 species and subspecies are described as new in the Tetrigidae, two genera and 24 species and subspecies in the Eumastacidae. Of the 43 new forms the holotypes of 25 are deposited at Canberra, four each at Adelaide and Sydney, nine at Cambridge, Mass., and one at Washington, D. C. Of the total of 80 species and subspecies treated, some 16 tetrigids and 19 eumastacids are now recorded in North American collections. The 37 previously known forms (not including synonyms) were described by Sjöstedt (25), Ignacio Bolivar (6), Walker (3), Erichson (2), and Stal (1).

This book is attractive, but the binding is not especially sturdy. In Mr. Rehn's habitual style, which has become a tradition for completeness of detail in orthopterological work, careful attention is given to the location of places, the distributional pattern of the major entities both within and outside of Australia, and full descriptions of higher categories, genera and species. Photographs or drawings represent all but two of the 37 tetrigids and all but 13 of the 43 eumastacids. There is an index to the systematic categories treated. A total of 424 footnotes are used to separate certain references and many very interesting and valuable details from the more formal systematic text. Some readers may wonder if the number of footnotes might not have been somewhat reduced without loss of detail. In the case of *Moraba improcera,* for instance, the original description has four different footnotes pointing out that the holotype has been dried from a wet preservative and that consequently there has been shriveling and an uncertain amount of change in color and shape.

While this work will naturally become a standard wherever Australian grasshoppers are studied, and the concentration of types is mainly in Australia where they will give an added impetus to research by resident students, American orthoperists concerned with the world fauna will have a much improved reference series available as a result of Mr. Rehn's comprehensive studies. The specimens collected in Australia by P. J. Darlington in the early 1930's, and now located at the Museum of Comparative Zoology in Cambridge, have proved especially helpful. It may interest Americans that one eumastacid, *Callitala lesueuri,* is named for Charles A. Lesueur, a member of an early French expedition to Australia who eventually came to America, was an active zoologist in Philadelphia, and later joined Thomas Say in the historic colony at New Harmony, Indiana.

But few improvements could be suggested for this admirable work. Identification keys might be used with greater facility if more references to appropriate illustrations were inserted directly in the couplets. The lack of opportunity to consult the historic Sjöstedt material at Stockholm necessarily has been responsible for incomplete information on certain species, but Mr. Rehn has assured me that this handicap was not serious and that most of Sjöstedt's species are recognizable without reference to the Stockholm types.

A manuscript on the Pyrgomorphinae has been completed for some months and is expected to constitute Volume 2. At present Mr. Rehn is busy with the Cyrtacanthacridinae (spine-throats) which are the largest single group of grasshoppers in Australia, and which consequently are expected to require two volumes. Treatment of remaining groups will follow, probably in two volumes, and it is hoped that a final volume will bring together much material on distribution and other general aspects, so that about seven volumes are planned. This modern work reflects the author's 50 years of experience with the world fauna as well as the availability of a collection which in many groups of Orthoptera is the finest in existence. For the majority of users who have struggled with previous Australia revisions it has the added advantage of being in English.

One wonders how many taxonomists endowed with much natural ability and high ideals have had their hopes for major taxonomic accomplishment falter and then collapse in the face of advancing age, administrative responsibilities and seemingly endless interruptions. At slightly past 70 years of age, Mr. Rehn may be congratulated for not having allowed himself to lose sight of his goal. We may hope that there is for him a well deserved satisfaction in seeing a successful project reach the publication stage, and also that nothing will prevent the completion of the entire review of Australian grasshoppers.

ASHLEY B. GURNEY

Division of Insect Detection and Identification
Bureau of Entomology and Plant Quarantine

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

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German lepidopterist wishes to correspond and receive live material (eggs and pupae) in exchange for dried imagoes. Johannes Reichel, Koenigsberg, Krs. Wetzlar 16, Germany.

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Wanted—Reprints or papers concerning insects taken in Alaska for inclusion in list of Alaskan insects. R. H. Washburn, Alaska Experiment Station, Palmer, Alaska.

Conopidae of the World wanted. Will pay 10¢ to $1.00 for pinned and labelled specimens. S. Camras, 4407 N. Milwaukee Ave., Chicago 30, Illinois.

Anisoptera—Nearctic sp. wanted for exchange, espec. Ophiog., Arigom., Aeschna, Neurocor., Somatoc., Cordulia, Dorocor., Leucor. R. D. Cuyler, N. C. State College, Raleigh, N. C.

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ENTOMOLOGICAL NEWS

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The Taxonomic Value of Male Genitalia in the Ithomiidae (Lepidoptera)

By Richard M. Fox, Colorado College, Colorado Springs, Colo.

During the past sixteen years I have studied more than 20,000 Ithomines and have been able to account for nearly all the names published to date for subspecies and species. Hundreds of dissections of male genitalia have been made, with most of the names represented. In view of this rather comprehensive survey of the family, it may be of interest to summarize the worth of the male genitalia as taxonomic criteria in the Ithomiidae. It is understood, of course, that sound taxonomy can be based under no circumstances only on a single criterion. Nor is it thought that the findings presented here will appear new or startling to the experienced systemist; this study has the merit only of being based on comprehensive data within one major taxonomic category.

J. Kremky was the first to use male genitalia for systematizing the Ithomines (1925). This pioneer work suffered from being based on a small collection rather than on fully representative material. In recent years, R. F. d'Almeida has made several attempts (1939–45) to utilize male genitalia as a basis for the classification within this family.

I find that the family Ithomiidae includes some 349 species, many of them strongly polytypic, grouped into 45 genera and into two subfamilies of unequal size. (By way of contrast, Bryk's catalogue (1937) listed 518 species in 38 genera.) The smaller subfamily contains only the genus *Tellervo*, which in turn com-

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prises a single, strongly polytypic species found in the Australian tropics. The other subfamily, the Ithomiinae, is found in the American tropics and is divided into eight tribes.

At the family level, male genitalic structures are in this case not specific. There is no characteristic feature common to all the Ithomiidae but unlike the genitalia of any other family. However, these structures indicate interfamilial relationships, although nothing not also indicated by other structures such as the fore legs, the antennae, the palpi, the wing venation or the pattern anatomy.

Four of the eight tribes in the Ithomiinae have characteristic male genitalia enabling immediate tribal identification from these structures alone. The other four tribes cannot be diagnosed surely by the male genitalia, so that their separation depends on the analysis of other structures.

For identifying the 45 genera in the family, there are 44 recognizable and definable kinds of male genitalia. Here these structures are clearly of great value. However, two of the primitive genera, *Tithorea* (containing two species) and *Elzunia* (containing seven species), are identical in the male genitalia, although nearly every other structure separates the two genera and the included species.

Fifteen of the 45 genera are monotypic; thus 334 of the species belong in 30 genera. In 23 of these polytypic genera, all included species can be distinguished by the male genitalia. In one genus (*Scada*) slight but constant differences enable the recognition of the subspecies. Thus in seven polytypic genera, male genitalia will not differentiate species. Two of these are *Tithorea* and *Elzunia*. In the remaining five polytypic genera, male genitalia neatly diagnose species groups, but do not differentiate the species within the groups.

The traditional way to identify a butterfly is by means of its color and pattern. It is more than a little dangerous to rely on color and pattern to sort the Ithomines into species, however, and this is caused by three curious phenomena: There are a number of cases of remarkable parallel evolution of pattern and color by which "sibling" species occur; there is quite extensive mimicry within the family; the subspecies of a polytypic species frequently show striking divergence in coloring and in development of the pattern. As a consequence, one must examine very carefully two Ithomines that look alike, for they may be different species; and conversely, when one has an aggregation of different-looking members of a genus, they can easily belong to a single species. Not colors and spots, but structures must be studied. Thus the male genitalia frequently are of the utmost value for untangling the taxonomic snarl.

In the following table, the number of species in each tribe is listed to show how many can be identified with male genitalia to species, how many to species group only, and how many do not separate by male genitalia.

Tribe	*to species*	*to species group*	*no separation*
Tellervo (genus)	1		
Tithoreini	10		9
Melinaeini		13	
Mechanitini	14	10	
Napeogenini	3	72	
Ithomiini	25		
Olereini	68		
Dircennini	71		
Godyrini	53		
Total species	245	95	9
% of species	70.2	27.2	2.5

References Cited

d'Almeida, R. F. 1939. Contrabução ao estudo dos Mechanitidae (Lep. Rhopalocera). Segunda Nota. Rev. Ent., 10: 277–281.

——. 1941. Contrabução ao estudo dos Mechanitidae (Lep. Rhopalocera). 4ª Nota. Papéis Avulsos, 1: 79–86.

——. 1945. Revisao do Genero *Xanthocleis* Boisd., 1870. Arquivos de Zoologia, 4: 97–112.

Bryk, Felix. 1937. Danaidae II. Lepidopterorum Catalogus, pars 80: 441–639. W. Junk, 's-Gravenhage.

Kremky, J. 1925. Neotropische Danaididen in der Sammlung des Polnischen Naturhistorischen Staatsmuseums in Warschau. Ann. Zool. Mus. Polonici Hist. Nat., 4: 141–275.

New Species of Acmaeodera from California (Coleoptera: Buprestidae)

By Josef N. Knull, Department of Zoology and Entomology,
The Ohio State University, Columbus, Ohio

Acmaeodera fattigi n. sp.

♀. Rather robust, elongate, cuneate at apex; ground color shining black; each elytron with yellow spots as follows: one in middle at base, two back of base, two at middle, two back of middle and one near apex, an elongate red spot at apex, elytra and sides of pronotum clothed with appressed plumose white scales; head and rest of pronotum densely clothed with white pubescence; ventral surface densely clothed with appressed plumose scales.

Head convex, covered with large shallow punctures; antennae serrate from fifth segment.

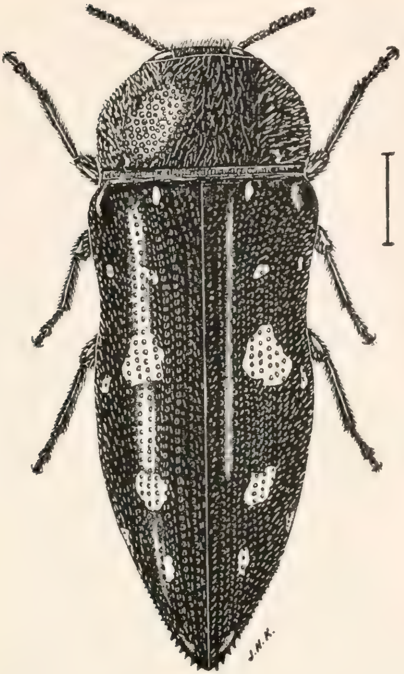
Pronotum convex, much wider than long, widest in middle, wider at base than apex; sides broadly rounded, constricted at base and apex; disk with slight median depression at base and one each side; surface densely coarsely punctate, punctures larger and closer on sides, base transversely corrugated.

Elytra at base as wide as base of pronotum; sides expanded back of base, then constricted and again expanded at middle, converging to rounded coarsely serrate apices; disk convex, umbone prominent; surface with closely placed large punctures forming striae, interspaces finely punctate, outer interspaces near apex serrulate.

Anterior margin of prosterum with wide emarginate truncation, margin not reaching lateral prolonged front angles. Abdomen beneath densely, finely punctate, punctures concealed by vestiture; last visible segment not modified.

Length 7.1 mm.; width 2.5 mm.

Holotype ♀ collected at Jacumba, San Diego Co., California, July 6, 1952. Two *paratypes* collected at Mountain Springs, same county, June 28 and July 6, 1952. All specimens collected by D. J. and J. N. Knull and in collection of author.



Acmaeodera fattigi n. sp. (Line equals 1 mm.)

This species should stand next to *A. mimicata* Knull (1938) from which it can be separated by the cuneate elytral apices, yellow mark at base of each elytron and elongate red mark at apex.

The prosternal margin is similar to that of *A. pinalorum* Knull (1950); however the long pubescence on elytra will separate *A. pinalorum* from *fattigi*.

I take pleasure in naming this species for P. W. Fattig, who has added much to our knowledge of Georgia insects.

References

KNULL, J. N. 1930. A new species of Acmaeodera and one new subspecies (Coleoptera, Buprestidae). Ent. News 41: 15–16.

——. 1938. New southwestern Buprestidae and Cerambycidae. Ann. Ent. Soc. Amer. 31: 135–143.

A Taxonomic Note on the Larvae of Aedes Schizopinax Dyar

By WILLIAM D. SUDIA, Communicable Disease Center, Public Health Service Federal Security Agency, Atlanta, Georgia

Aedes schizopinax Dyar is considered by most mosquito authorities to be quite rare. Dyar described the species in 1929, and it has apparently only been recorded since then by G. Allen Mail from Gallatin and Jefferson Counties, Montana, and Mammoth Hot Springs, Wyoming. Matheson (1944) includes *schizopinax* in his key to *Aedes* larvae where he mentions as the chief character the following: "Scale of comb thornlike, the long apical spine without lateral spinules." Dyar (1929) in his original description states, "Lateral comb of the eighth segment of about 50 scales, each with long thorn-shaped central point and only traces of lateral spinules."

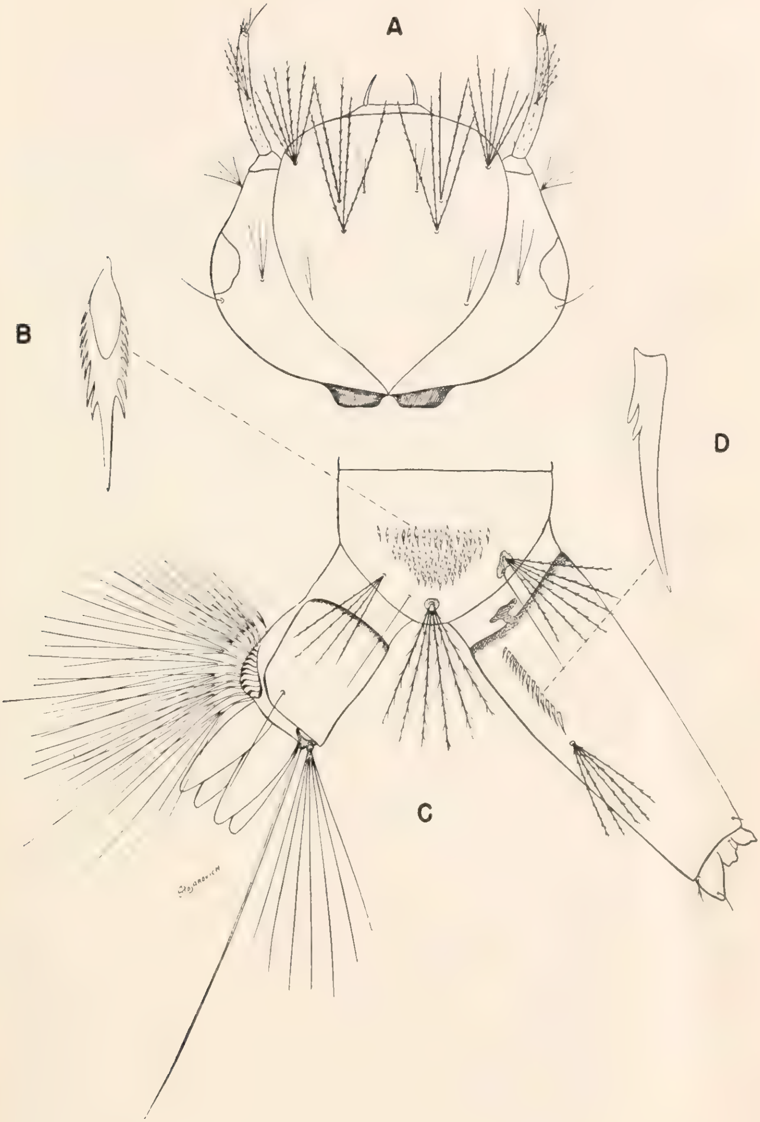
The author has examined the comb scales of 6 of the 13 paratype larval skins from the U. S. National Museum and noted that under the magnification of a dissecting microscope (54x), no lateral spinules could be seen. However, upon closer examination using a compound microscope (430x), lateral spinules could be seen. Dr. Alan Stone of the National Museum kindly examined the larval skin of the holotype and others of the type series. He confirmed the presence of lateral spinules when observed under high magnification, and stated that they were less readily seen under lower magnifications.

The present trend in identification procedures is to confirm such characters as the shape of comb scales under the highest magnification available. If a taxonomist observed lateral spinules on the comb scales, he would be unable to run specimens of *schizopinax* to this species in Matheson's larval key. This situation may possibly explain the rarity of this species.

EXPLANATION OF FIGURES

Details of the larva of *Aedes schizopinax* Dyar. (Drawing based on specimens collected at Sedan, Montana).

A. Dorsal view of head. B. Comb scale of eighth segment. C. Posterior portion of abdomen. D. Pecten tooth.


A
B
D
C
Stojanovich

In an attempt to clarify this problem, a detailed drawing of the larva is presented as well as the following key which involves those species included in couplets 45 and 46 on page 135 of Matheson's "Handbook of the Mosquitoes of North America."

1. Upper head hairs with five or more branches............2
   Upper head hairs usually single to four-branched........3
2. Mesothoracic hair No. 1 very long and stout; all hairs in anterior submedian prothoracic group of about the same length and thickness (Western).......*pullatus* Coquillett
   Mesothoracic hair No. 1 short and delicate; one hair in anterior submedian prothoracic group single and much longer than the other two hairs (Eastern)...*canadensis* Theobald
3. Individual comb scale rounded at apex, more or less evenly fringed with sub-equal spinules; prothoracic hairs 1–3 single..................................*pionips* Dyar
   Individual comb scale pointed at apex, with a large apical thorn and fringed with extremely fine spinules; prothoracic hairs 1–3 not all single..............*schizopinax* Dyar

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Bibliography

Dyar, H. G. 1929. A new species of mosquito from Montana with annotated list of species known from this state. Proc. U. S. Natl. Mus. 75(23): 1–8.

Mail, G. A. 1934. The mosquitoes of Montana. Mont. Agr. Exp. Sta. Bull. 288: 1–72.

Matheson, R. A. 1944. A handbook of the mosquitoes of North America. Comstock Pub. Co., 314 pp.

Data on Chlorobenzene Compounds

The Solvay Process Division, Allied Chemical and Dye Corporation, has prepared a special bibliography and summaries of tests on the biological activity of various chlorinated benzene compounds, as taken from National Research Council publications. The compilation is for free distribution and as an aid to research workers in organic chemicals. Address: 61 Broadway, New York 6, N. Y.

Current Entomological Literature

Compiled by VENIA T. PHILLIPS, Librarian

Academy of Natural Sciences of Philadelphia

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania pertaining to entomology, including all arthropods except Crustacea. Coverage will be world-wide as regards major contributions to systematics as well as for all papers on morphology, physiology, embryology, etc. In addition, for species from the Americas and the Pacific (Nearctic, Neotropical and Polynesian regions) all minor contributions to taxonomy, distribution, etc., will also be recorded.

This list gives references of the year 1953 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

Note: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in Entomological News are not listed.

GENERAL—Chambers, V. H.—Hymenoptera in Dutch art. [60] 89: 71. **Hicks, E. A.**—Observations on the insect fauna of birds' nests. [82] 26: 11–18. **Hocking, B.**—Plastic embedding of insects—a simplified technique. [43] 85: 14–18, ill. **Hölldobler, K.**—Gibt es in Deutschland Ameisengäste, die echte täuscher sind. [100] 40: 34–35. **Kato, M., T. Matsuda and Z. Yamasita.**—Associative ecology of insects found in the paddy field cultivated by various planting forms. [Sci. Reports, Tohoku Univ. 4th ser.] 19: 291–301, 1952. **Knowlton, G. F.**—Parasites on Quail. [36] 48: 19. —— **and D. L. Wray.**—Shuttle service with honey-sample shipping tubes (for mailing small insects). [36] 48: 9. **MacPhee, A. W.**—The influence of spray programs on the fauna of apple orchards in Nova Scotia. V. The predaceous thrips Haplothrips faurei Hood. [43] 85: 33–40. **Tamino, G.**—Osservazioni sul volo degli insetti. [Boll. di Zool.] 18: 139–47, ill., 1951. **Van Dinther, J. B. M.**—Details about some flytraps and their application to biological research. [57] 14: 201–4, ill. **Williams, D. D.**—A simple Drosophila trap for wet weather collecting. [36] 48: 24–25, ill.

BIOGRAPHIES, OBITUARIES—Blair, Kenneth Gloyne, 1882–1952. In memoriam, by C. N. Hawkins and others. [60] 89: 25–29, port. **Bühlmann, Otto,** 1875–1951. —Obituary, with port. by Max Hüther. [Nachrichtenbl. Bayer. Ent.] 1: 57–58, 1952. **Krogerus, Rolf.**—(Portrait, with short biographical notice on his 70th birthday.) [Ent. Tidskrift] 73: 218. **Onishi, Koichi,** 1922–1952. Obituary notice by Theodore Aarons. [92] 12: 261, 1952. **Ouellet, Brother Joseph,** 1869–1952. Obituary by G. E. Shewell. [43] 85: 79–80. **Ruth, Perry W.,** 1876–1952. (Obit.) [92] 12: 262, 1952. **Saalas, Uunio.**—(Portrait, with short biographical notice on his 70th birthday.) [Ent. Tidskrift] 73: 217, 1952. **Seppala, Väinö Aatu,** –1949.—In memoriam, signed A. N. [103] 114–15, 1950. **Stephan, Julius.** —75 jahre alt. (Biogr. port.) [Zeit. Wiener Ent. Ges.] 37: 4, 1952. **Turati, Enilio,** 1858–1938.—(Biogr., bibl.) [Zeit. Wiener Ent. Ges.] 37: 96–98, 1952. **Williamson, William,** 1869–1950. [Obit.] by James Ritchie. [Proc. Linn. Soc. London] 163: 261–62, 1952.

ANATOMY, PHYSIOLOGY, MEDICAL—Anchel, M. —Characterization of drosophilin C as a polyacetylene. [Arch. Biochem. Biophys.] 43: 127–35. **Auclair, J. L.**— Amino acids in insects. [43] 85: 63–68. **Barth, R.**—Das männliche Duftorgan von Erebus odoratus L. (Noctuid.). [157] 289–301, 1952. **Cavazza, F.**—Azione del freddo su una sola parte della crisalide di lepidotteri. [Boll. di Zool.] 18: 171–74, 1951. **Duporte, E. M.**—The protocephalon: a critique of recent interpretations. [43] 85: 41–55, ill. **Fingerman, M. and F. A. Brown, Jr.**—Color discrimination and physiological duplicity of Drosophila vision. [113] 26: 59–67. **Fukuda, S.**—Function of the pupal brain and suboesophageal ganglion in the production of non-diapause and diapause eggs in the silkworm. [Annot. Zool. Japon.] 25: 149–55, ill., 1952. **Hackman, R. H.**—Green pigments in the hemolymph of insects. [Arch. Biochem. Biophys.] 41: 166–74, 1952. **Haug, G.**—Morphologische und physiologische Untersuchungen an den Verdauungsorganen der Mallophagen und Anopluren. [157] 72: 302–44, 1952. **Helvey, T. C.**—The natural concentration of deuterium in honey. [Science] 117: 276–77. **Henke, K.**—Die Musterbildung der Versorgungssysteme in Insektenflügel. [Biol.

Zentralblatt] *72*: 1–51. **Homann, H.**—Die Nebenaugen der Araneen. 2. Mitteilung. [157] *72*: 345–64, 1952. **Howe, R. W. and H. D. Burges.**—A note on the resistance of Tenebrio molitor L. (Tenebrionidae) to tropical temperatures. [60] 89: 4–6. **Ichikawa, M. and S. Kaji.**—Function of the corpus allatum in the silkworm (Bombyx mori). [Annot. Zool. Japon.] 24: 1–12, 1950. —— **and J. Nishiitsutsuji.**—Studies on insect metamorphosis. I. Role of the brain in the imaginal differentiation of lepidopterans. [Annot. Zool. Japon.] 24: 205–11, 1951. II. Determination of the critical period for pupation in the Eri-silkworm, Philosamia cynthia ricini. *Ibid.* 25: 143–48, 1952. **Kikkawa, H. and H. Kuwana.**—Origin of nicotinic acid in Bombyx mori (Silkworm). [Annot. Zool. Japon.] 25: 30–33, 1952. **Lerma, B. de.**—Citospettrografia di fluorescenza dei tubi malpighiani di ortotteri. [Boll. di Zool.] 18: 7–8, 1951. Ricerche istochimiche sui "corpi lutei" di ortotteri con l'applicazione del test di Schultz per la sostanze colesteroliche. [Boll. di Zool.] 18: 5–6, 1951. **Martignoni, M. E.**—Die submikroskopische Textur der peritrophischen Membran von Peridroma margaritosa (Haw.) (Noctuidae). [130] 25: 107–10, ill., 1952. **Miyazaki, J. and K. Koidsumi.**—The role of epicuticular lipid in the water economy of a rice-stem borer during the hibernation period. [Annot. Zool. Japon.] 25: 388–93, 1952. **Peffly, R. L.**—Crossing and sexual isolation of Egyptian forms of Musca domestica (Muscidae). [62] 7: 65–75. **Popham, E. J.**—The influence of temperature and intensity of illumination upon the phototactic responses of Corixidae. [60] 89: 1–2. **Remotti, E. and A. M. Luzzietti.**—Razze fisiologiche di Anopheles maculipennis atroparvus Miss. e loro importanza nella epidemiologia malarica. [Boll. di Zool.] 18: 311–19, ill., 1951. **Rockstein, M. and M. D. Inashima.**—Enzymes in insects: alkaline phosphatase. [36] 48: 20–23. **Sarà, M.**—Sulla capsula cefalica delle larve dei ditteri psicodidi. [Boll. di Zool.] 18: 49–56, 1951. **Sholander, P. F., W. Flagg, V. Walters and L. Irving.**—Climatic adaptation in arctic and tropical poikilotherms. [113] 26: 67–92 (Incl. insects and spiders). **Strehler, B. L.**—Firefly luminescence in the study of energy transfer mechanism. II. Adenosine triphosphate and photosynthesis. [Arch. Biochem. Biophys.] 43: 67–79. **Talice, R. V.**—Tropismos de Musca domestica y de otras "Moscas doméstivas." [Archivos, Soc. Biol. Montevideo] 19: 15–17, 1952. **Vité, J. P.**—Temperaturversuche an Ips typographus L. [160] 149: 195–

206, 1952. **Waterhouse, D. F.**—Studies on the digestion of wool by insects. VII. Some features of digestion in three species of dermestid larvae and a comparison with Tineola larvae. [27] 5: 444–59, ill., 1952. **Waterhouse, F. L.**—Reversal of phototaxis in prepupae of Hymenoptera (Tenthredinidae) caused by amyl acetate vapour emanating from marking paint. [98] 171: 438. **Weber, H.**—Die Darmtracheenschläuche der Elefantenlaus, ein für die Insekten neues Organ (Mallophaga). [100] 40: 42, ill.

ARACHNIDA AND MYRIOPODA—Homann, H.—Araneae. (See Anatomy.) **Imamura, T.**—On the life-history of Partnunia uchidai, a water mite parasitic on stone-flies (Acarina). [Annot. Zool. Japon.] 24: 54–58, ill., 1950. **Lawrence, R. F.**—Two new scale-mite parasites of lizards (Pterygosomidae). [151] 103: 9–18, ill. **Levi, H. W.**—Observations on two species of Pseudoscorpions. [43] 85: 55–62, ill. **Loomis, R. B. and D. A. Crossley, Jr.**—A new species of chigger from eastern Kansas (Acarina, Trombiculidae). [82] 26: 32–34, ill. **Schmidt, H.**—Nahrungswahl und nahrungsverarbeitung bei diplopoden (Tausendfüsslern). [Mitteil. Natur. Vereins Steiermark] 81/82: 42–66, 1952. **Schubart, O.**—Um Diplopoda (Calymmodesmus sodalis n. sp.), companheiro de formigas em migração (Proterospermophora, Stylodesmidae). [1] 24: 437–42, ill., 1952. **Sekiguchi, K.**—On a new spinning gland found in geometric spiders ánd its functions (Araneae). [Annot. Zool. Japon.]25: 394–99, ill., 1952. **Witt, P. N.**—Ein einfaches Prinzip zur Deutung einiger Proportionen im Spinnennetz (Arachnida). [Behaviour, Leiden] 4: 171–89, ill., 1952. **Zumpt, F.**—Milben-dankbare objekte für das mikroskop. [Mikrokosmos] 42: 97–101, ill.

SMALLER ORDERS—Bick, G. H.—The nymph of Miathyria marcella (Selys) (Libellulidae). [56] 55: 30–36, ill. (k). **Carriker, M. A.**—Studies in neotropical Mallophaga (X) Amblycera of the New World "Galliformes," Pt. 2. [Rev. Acad. Colombiana] 7, no. 28: 492–510, ill., 1950 (*). **Clément, G.**—Recherches sur le polymorphisme de Psammotermes hybostoma Desneux. [18] 14: 95–116, ill., 1952. **Gardner, A. E.**—The life-history of Leucorrhinia dubia (Van der Lind) (Odonata). [Ent. Gazette] 4: 45–65, ill. **Geigy, R.**—Sandfloh-probleme (Siphonaptera). [100] 40: 40–42. **Goss, R. J.**—The advanced embryology of the book louse, Liposcelis divergens Badonnel (Psocopters; Liposcelidae). [79] 157–205, ill. **Grassé, P.-P. and C.**

Noirot.—La sociotomie: migration et fragmentation de la termitière chez les Anoplotermes et les Trinervitermes. [Behaviour, Leiden] 3: 146–66, ill., 1951. **Hall, C. C., Jr.**—The Trichoptera of Dallas County, Texas. (Abstract.) [So. Meth. Univ. Abstracts of Theses] 14: 5, 1950–51. **Haug, G.**—Anoplura. (See Anatomy.) **Hickin, N. E.**—Courtship of a caddis fly, Mystacides nigra L. (Trich. Leptoceridae). [60] 89: 71. **Imamura, T.**—Plecoptera. (See Arachnida.) **Kéler, S. v.**—Über den feineren bau der tarsen bei Pseudomenopon rowanae Kéler (Mallophaga). [28] 2: 573–82, ill., 1952. **Liong, L. S.**—Termite trapping. [57] 14: 220–22, ill. **MacPhee, A. W.**—Thysanoptera. (See General.) **Moore, N. W.**—Notes on the oviposition behaviour of the dragonfly Sympetrum striolatum Charpentier. [Behaviour, Leiden] 4: 101–3, 1952. On the so-called "territories" of dragonflies (Anisoptera). *Ibid.* 85–100, ill. **Schmid, F.**—Le groupe de Chilostigma (Trichopt., Limnoph.). [Arch. für Hydrobiol.] 47: 75–163, ill., 1952 (*). Le groupe de Lenarchus Mart. (Trichopt. Limnophil.). [130] 25: 157–210, ill., 1952 (S). **Schmitz, H.**—(See Diptera.) **Snyder, T. E.**—Termite biological notes. [Pest Control] 21: 40. **Stannard, L. J., Jr.**—The genus Halmathrips Hood (Thysanoptera, Thripidae). [56] 55: 1–6, ill. **Traub, R.**—Wenzella obscura, a new genus and new species of flea from Guatemala (Siphonaptera). [152] 43: 77–85, ill. **Weber, H.**—(See Anatomy.) **Westfall, M. J.**—The nymph of Miathyria marcella Selys (Odonata). [64] 36: 21–25, ill.

ORTHOPTERA—Cavazza, F.—(See Anatomy.) **Colombo, G.**—Osservazioni sulla pigmentazione larvale in Anacridium aegyptium L. (Acrididae). [Boll. di Zool.] 18: 163–69, 1951. **Dansan, A.**—Sur le chant de l'Eugaster spinulosus Joh. (Tettigonidae). [Compt. rend. Soc. Sciences Nat. du Maroc] 1952, no. 8: 127–28, ill. **De Wet, W. J. and D. van V. Webb.**—Field observations on the behaviour of hoppers of the brown locust in the swarming phase. [S. Afr. Dept. Agr. Science Bull.] 337, 38 pp., ill., 1951. **Gurney, A. B.**—Distribution, general bionomics, and recognition characters of two cockroaches recently established in the United States. [151] 103: 39–56, ill. (See Hymenoptera.) **Huber, W.**—Das paarungsverhalten von Oedipoda coerulescens (Acrididae). [130] 25: 97–106, ill., 1952. **Hullo, A.**—Role des tendances motrices et des données sensorielles dans l'apprentissage du labyrinthe par les blattes (Blatella germanica). [Behaviour, Leiden] 1: 297–

311, 1948. **Khalifa, A.**—Sexual behaviour in Gryllus domesticus L. [Behaviour, Leiden] 2: 264–74, ill., 1950. **Lerma, B. de.**—(See Anatomy.) **Pickford, R.**—A two-year life-cycle in grasshoppers (Acrididae) overwintering as eggs and nymphs. [43] 85: 9–14. **Popov, G.**—Apparent tendency to phase variation in an Iranian grasshopper, Pyrgolera armata (F. W.) (Acrididae). [61] 28: 277–84, ill., 1952. **Princis, K.**—Blattarien aus Venezuela, gesammelt von Herrn G. Marcuzzi. [Ann. Ist. e Mus. Zool., Naples] 4: no. 12, 11 pp., 1952. **Riherd, P. T.**—The occurrence of Blatella vaga Hebard in Texas (Blattidae). [56] 55: 39–40. **Sauvageau, J.-L.**—Le criquet sauterelle (Famille des Locustidae). [Revue d'Oka] 27: 1–21. **Urquhart, F. A. and J. R. Beaudry.**—A recently introduced species of European grasshopper. [43] 85: 78–79, ill.

HEMIPTERA—Barber, H. G.—A second revision of the genus Ptochiomera Say and its allies (Lygaeidae). [56] 55: 19–27 (k*). **Börner, C.**—Europae centralis aphides: Die blattläuse Mitteleuropas, namen, synonyme, wirtspflanzen, generationszyklen. [Schriften Thüringischen Landesarbeitsgemeinschaft für Heilpflanzenkunde u. Heilpflanzenbeschaffung in Weimar] 4, 259 pp., 1952. **Carayon, J.**—Organe de Ribaga et fécondation hémocoelienne chez les Xylocoris du groupe galactinus (Anthocoridae). [2] 236: 1099–1101, ill. **DeLong, D. M. and R. F. Ruppel.**—Mexican Alconeura. Part III. Six new species of Alconeura (Cicadell.). [Lloydia] 15: 246–50, 1952. **Drake, C. J.**—Synonymical data and description of a new Hydrometra. [82] 26: 40–42, ill. **Elkins, J. C.**—The Reduviidae of Dallas and Denton counties, Texas. (Abstract.) [So. Methodist Univ. Abstracts of Theses] 14: 3, 1950–51. **Fennah, R. G.**—A new froghopper from Bolivia (Cercopoidea). [31] 66: 51–52, ill. **Harz, K.**—Ein Beitrag zur Biologie von Reduvius personatus L. [Nachrichtenbl. Bayer. Ent.] 1: 73–75, 1952. **Kormilev, N. A. and J. A. de Carlo.**—Una especie nueva del genero "Ochterus" Latreille (1807) del Paraguay (Ochteridae). [132] 154: 155–59, ill., 1952. **Maldonado Capriles, J.**—Redescription of the genus Burtinus Stal and description of a new species from Puerto Rico (Coreidae). [56] 55: 40–44, ill. **Pierantoni, U.**—La simbiosi in Tropidothorax leucopterus (Lygaeidae). [Boll. di Zool.] 18: 1–3, 1951. **Popham, E. J.**—Measurements of the swimming speeds of some of the commoner species of Corixa. [60] 89: 3. (See Anatomy.) **Ribaut, H.**—Homoptères auchénorhynques. II (Jassidae). [Faune de France] 57, 474 pp., ill., 1952. **Ross, H. H. and D. M. DeLong.**—Biological and taxonomic notes on Erythroneura (Cicadellidae). [106] 53: 77–90, ill. (*). **Ruppel, R. F. and D. M. DeLong.**—Ten new species of Mexican Dikrella (Cicadellidae). [36] 48: 1–9, ill. **Wagner, E.**—Blindwanzen oder Miriden. (Die Tierwelt Deutschlands, Teil 41.) G. Fischer, Jena, 1952, iv, 218 pp., ill. 15.60 DM. (Review by H. Sachtleben in [28] 2: 636–7.) **Wilson, C. A.**—A new Velia from Mississippi. [64] 36: 27–29, ill.

LEPIDOPTERA—Aguilar, J. d'.—Hyphantria cunea Drury espèce d'origine américaine, fera-t-il bientôt partie fr notre faune? (Arctiidae). [138] 58: 7–8. **Arnhold, F. R.**—Notes on collecting Anthocaris midea and Euchloe olympia. [85] 6: 99–100, 1952. **Barth, R.**—(See Anatomy.) **Cavazza, F.**—(See Anatomy.) **Daniel, F.**—Zwei neue südamerikanische Arctiidenarten. [Mitt. Münchner Ent. Gesell.] 42: 130–33, 1952. **Evans, W. H.**—Luring Anthocharis sara into the net. [85] 6: 100, 1952. Notes on Anthocharis sara and reakirtii. [85] 6: 106, 1952. **Ferguson, D. C.**—The Lepidoptera of Nova Scotia. Pt. I. Macrolepidoptera. (Abstract.) [Nova Scotia Inst. Sci. Proc.] 23: 110–11, 1950–51. **Forbes, W. T. M.**—A draft key to Taygetis (Satyrinae). [85] 6: 97–98, 1952. **Fukuda, S.**—(See Anatomy.) **Glass, E. H. and P. J. Chapman.**—The red-banded leaf roller and its control. [Bull. N. Y. Expt. Sta., Cornell] 755, 42 pp., ill., 1952. **Ichikawa and Kaji.**—(See Anatomy.) **Ichikawa and Nishiitsutsuji.**—(See Anatomy.) **Kikkawa and Kuwana.**—(See Anatomy.) **Klimesch, J.**—Zur Morphologie und Biologie der Raupe ler Coleophora separatella Benander (Coleophoridae). [Zeit. Wiener Ent. Ges.] 37: 17–24, ill., 1952. **Martignoni, M. E.**—Die submikroskopische Textur der peritrophischen Membran von Peridroma margaritosa (Haw.) (Noctuidae). [130] 25: 107–10, ill., 1952. **Merritt, J. R.**—Butterflies and hilltops. [85] 6: 101–2, 1952. **Meyer, J. H.**—Eine neue Form der amerikanischen Catocala relicta Walker. [Zeit. Weiner Ent. Ges.] 37: 7–10, ill., 1952. **Michener, C. D.**—A note on a saturniid moth from Argentina. [82] 26: 10. **Osthelder, L.**—Variationsbreite von Crambus margaritellus Hb. [Nachrichtenbl. Bayer. Ent.] 1: 10–13, 1952. **Petersen, B., O. Törnblom and N.-O. Bodin.**—Verhaltensstudien am Rapsweissling und Bergweissling (Pieris napi L. und Pieris bryoniae Ochs.). [Behaviour, Leiden] 4: 67–84, ill., 1952. **Pohley, H.-J.**—Über die Unterteilung der Chromosomen in identische Mutationseinheiten bei Ephestia. [100] 40:

146–47. **Pronin, G. F.**—The apparent influence of isolation in some species of Geometridae. [85] 6: 93–94, ill., 1952. **Remington, P. S.**—Collecting along the Alaska Highway. [85] 6: 103–6, 1952. **Ruiter, L. de.**—Some experiments on the camouflage of stick caterpillars (Geometlidae). [Behaviour, Leiden] 4: 222–32, ill., 1952. **Sicher, H.**—Interspecific mating (Lycaena thoë and L. phlaeas americana). [85] 6: 108, 1952. A mutant of Strymon titus titus. [85] 6: 107, 1952. **Simmons, R. S. and C. J. Stine.**—The harvester butterfly, Feniseca tarquinius. [Maryland Nat.] 22: 19–20, ill., 1952. **Sperry, J. L.**—A Racheospila species from Tulare Co., California, apparently undescribed (Geometridae). [36] 48: 26–27. **Struble, G. R.**—Unusual pupation site for Nymphalis californica. [85] 6: 107, ill., 1952. **Thomas, E. S.**—A European skipper, Adopaea lineola, at Columbus, Ohio. [85] 6: 92–93, 1952. **Tilden, J. W.**—Concerning the identity of Mitoura nelsoni Muiri. [85] 6: 95–96, ill., 1952. **Viette, P. E. L.**—Contribution à l'étude des Hepialidae: Une nouvelle espèce du Mexique. [Mitt. Münchner Ent. Gesell.] 42: 20–21, ill., 1952. **Waterhouse, D. F.**—(See Anatomy.) **Wolfsberger, J.**—Biologische und ökologische Beobachtungen am Fundort von Rebelia bavarica Wehrli (Psychid.). [Nachrichtenblatt der Bayerischen Entomologen] 1: 4–6, 1952. **Woodcock, H. E.**—Moths feigning death. [85] 6: 108, 1952. **Yoshimeki, M., M. Kato and G. Tomita.**—Serological studies of some ecological strains of the rice stem borer, Chilo simplex Butler. [Sci. Reports, Tohoku Univ. 4th ser.] 19: 335–38, 1952.

DIPTERA—Bellamy, R. E. and W. C. Reeves.—A portable mosquito bait-trap. [92] 12: 256–58, ill., 1952. **Benoit, P. L. G.**—Une anomalie de nervation alaire chez Glossina palpalis Rob.-Desv. [Rev. Zool. Bot. Afr.] 46: 293–94, ill., 1952. **Bequaert, J. C.**—The Hippoboscidae or louse-flies of mammals and birds. Part I. Structure, physiology and natural history. [51] 32: 1–209, ill., 1952. **Borgmeier, T.**—Syrphidenlarven in ameisennestern. [100] 40: 36. **Breland, O. P.**—Keys to the larvae of Texas mosquitoes with notes on recent synonymy. II. The genus Culex Linnaeus. [148] 5: 114–19, ill. The stirrup-shaped piece as an aid in the taxonomic study of mosquito larvae. [92] 12: 253–55, ill., 1952. **Carpenter, S. J.**—Notes on mosquitoes in North America: II. Collections at military installations in Indiana during 1944 and 1945. [92] 12: 251–52, 1952. III. Collections in Kentucky during 1944 and 1945. *Ibid.* pp. 252–53. **Coleman, R. W.**—A new blackfly species from

California (Simuliidae). [56] 55: 45–46, ill. **Colhoun, E. H.**—(See Coleoptera.) **Cova-Garcia, P.**—Distribución geográfica y datos bionómicos de los anofelinos de Venezuela. Publ. Div. de Malariologia, num. 10, Ministerio de Sanidad y Asist. Soc., Caracas, Zenezuela, 1951, 226 pp. (Review by H. H. Stage, [92] 12: 267, 1952.) **Frohne, W. C.**—Mosquito news from Alaska. [92] 12: 263, 1952. **and R. G.**—Mating swarms of males of the mosquito, Aedes punctor (Kirby), in Alaska. [92] 12: 248–51, 1952. **Frick, K. E.**—Some additions and corrections to the species list of North American Agromyzidae. [43] 85: 68–76. **Hardy, G. H.**—The phylogeny of Diptera. 2. Dolichopodidae. [60] 89: 7–11, ill. **Hedeen, R. A.**—The biology of the mosquito Aedes atropalpus Coquillett. [82] 26: 1–10. **Hennig, W.**—Bemerkenswerte neue Acalyptraten in der Sammlung des Deutschen Entomologischen Institutes. [28] 2: 604–18, ill., 1952 (S). **Huckett, H. C.**—Males of the genus Hylemya sens. lat. from North America, having dorsal bristles on mid metatarsus, with descriptions of new species (Muscidae). (Continuation.) [36] 48: 10–19, ill. **Jeyewickreme, S. H.**—Nocturnal mating in Taeniorhynchus (Mansonioides) uniformis (Theobald). [98] 171: 377. **Kosswig, C. and A. Sengün.**—Haben die Riesenchromosomen der Chironomus-larven eine definitive Strukturierung? [100] 40: 111–12, ill. **Kurihara, Y. and M. Kato.**—Associative ecology of the mosquito larvae and their biotic environments in the stone basin. [Sci. Reports Tohoku Univ. 4th Ser.] 19: 339–47, 1952. **Lenz, F.**—Chironomiden als Vorfrühlingsboten. [28] 2: 543–54, ill., 1952. **McNeel, T. E. and F. F. Ferguson.**—Psorophora cyanescens (Coquillett) new to the mosquito fauna of New Mexico. [92] 12: 241, 1952. **Mattingly, P. F.**—The problem of biological races in the Culex pipiens complex. [Proc. Linn. Soc. London] 163: 53–57, 1952. **Moriwaki, D. and T. Okada.**—Variations of peg-like bristles on egg-guide in Drosophila ananassae. [Annot. Zool. Japon.] 25: 212–17, ill., 1952. **Patterson, J. T. and W. S. Stone.**—Evolution in the genus Drosophila. Macmillan Company, N. Y., 610 pp., 74 figs., 109 tables, 1952, $8.50. (Review by T. Dobzhansky [62] 7: 92–3.) **Peffly, R. L.**—(See Anatomy.) **Pratt, H. D.**—Notes on American Mansonia mosquitoes. [56] 55: 9–19, ill. (k*). **Rasmuson, M.**—Variation in bristle number of Drosophila melanogaster. [7] 33: 277–307, 1952. **Remotti and Luzzietti.**—(See Anatomy.) **Rey, H. and S. Renjifo.**—Anopheles (N.) nuneztovari infectado en la naturaleza con Plasmodium sp. [Rev. Acad. Colombiana] 7, no. 28: 534–38, ill., 1950. **Roubaud, E.**—Sur certaines fluctuations culicidiennes observées en Vendée littorale, depuis l'occupation allemande. [2] 236: 645–48. **Sabrosky, C .W.**—The scientific name of the screw-worm, with a note on Paralucilia fulvicrula (Calliphoridae). [56] 55: 36–38. **Sarà, M.**—(See Anatomy.) **Schmitz, H.**—Die wachsende Zahl der als termitophil bekannten Phoriden. [100] 40: 36–37, ill. (*). **Spieth, H. T.**—Mating behaviour and sexual isolation in the Drosophila virilis species group. [Behaviour, Leiden] 3: 105–45, 1951. **Strenzke, K.**—Terrestrische chironomiden. XV. Bryophaenocladius nidorum (Edw.). [28] 2: 529–42, ill., 1952. **Talice, R. V.**—(See Anatomy.) **Tate, P.**—Prepupal moult in the blowfly (Calliphora erythrocephala). [98] 171: 341–42, ill. **Thompson, W. R.**—The tachinid parasites of Archips cerasivorana Fitch. (1) Dichaetoneura leucoptera Johns. [43] 85: 19–30, ill. (k). **Washburn, G. E.**—Progress report on mosquito ecological studies in California. [92] 12: 235–38, 1952. **Wentges, H.**—Zur Biologie von Tabanus sudeticus Zell. [Nachrichtenbl. Bayer. Ent.] 1: 78–79, 1952. **Williams, D. D.**—(See General.) **Wirth, W. W. and F. S. Blanton.**—Studies in Panama Culicoides (Heleidae): I. Description of six new species. [152] 43: 69–77, ill. **Zumpt, F.**—Fliegenmaden als echte Termitengäste. [100] 40: 37.

COLEOPTERA—Apolinar Maria, H.—Miscelanea entomologica. V. Catalogo sistematico, sinonimico y geografico de los insectos del genero "Carabus" (Latu sensu) que figuaraban en la coleccion del Museo del Instituto de La Salle. (Conclusion.) [Rev. Acad. Colombiana] 7: no. 28, pp. 468–73, ill., 1950. **Arnett, R. H., Jr.**—Notes on the venus Lacon (Elateridae). [47] 7: 5–7. **Besuchet, C.**—Larves et nymphes de Plectophloeus (Pselaphidae). [130] 25: 251–56, ill., 1952. **Blackwelder, R. E.**—Catalogo de coleopteros Colombianos. [Rev. Acad. Colomb. Cien. Exact. Fis. y Natur.] 8: 221–29, 1951. **Colhoun, E. H.**—Notes on the stages and the biology of Baryodma ontarionis Casey (Staphylinidae), a parasite of the cabbage maggot, Hylemya bassicae Bouché (Diptera: Anthomyiidae). [43] 85: 1–8, ill. **Edwards, J. G.**—The real source of Amphizoa secretions. [47] 7: 4. **Ehara, S.**—Comparative anatomy of the genitalia and the internal reproductive organs of ladybeetles belonging to Epilachna. [Hokkaido Univ. Fac. Sci., Jour.] 11: 21–33, ill., 1952. **Emden, F. I. van.**—The larvae of Dendezia and Figulus, with notes on some other larvae of Lucanidae. [Rev. Zool. Bot. Afr.] 46: 301–9, ill., 1952 (k). **Espanol, C., F.**—Coleópteros cavernícolas del macizo de la Musara (provincia Tarragona). [Speleon] 3: 197–203, 1952. **Fiedler, C.**—Neue Coelosternus aus Süd- und Central-Amerika (Curculionidae). [Mitt. Münchner Ent. Gesell.] 42: 22–39, 1952. **Finlayson, L. H.**—(See Hymenoptera.) **Froeschner, R. C. and E. P. Meiners.**—The Languriidae and Erotylidae of Missouri with notes Colombianos, ordenacion e iconografia. [Rev. Acad.)T and keys. [82] 26: 18–25. **Gacharná, G. C.**—Coccinellidos Colombianos, ordenacion e iconografia. [Rev. Acad. Colomb. Cien. Ex. Fis. y Natur.] 8: 243–44, 1951. **Gilbert, E. E.**—A taxonomic report on the Curculionidae (Snout-beetles) of Dallas county, with notes on their habitats. (Abstract.) [So. Meth. Univ. Abstracts of Theses] 14: 4, 1950–51. **Glass, V.**—Report on the aquatic Coleoptera of the Dallas area. (Abstract.) [So. Meth. Univ. Abstract of Theses] 14: 5, 1950–51. **Grandori, R. e L. and G. Domenichini.**—Contributo alla conoscenza biologica della Melasoma aenea L. (Chrysomel.) e dei suoi parassiti. [Boll. Zool. Agr. e Bach.] 18: 63–80, ill., 1952. **Herron, J. C.**—Biology of the sweet clover weevil and notes on the biology of the clover root curculio. [106] 53: 105–12. **Hicks, S. D.**—Distribution of Carabus vietinghoffii in North America. [47] 7: 1–3. **Howe and Burges.**—(See Anatomy.) **Janssens, Emile.**—Betrachtungen über die geographische verbreitung der Paussiden. [100] 40: 39–40. **John, H.**—Eine neue Species von Discoloma Er. (Notiophygidae). [28] 2: 618–20, ill., 1952 (S). **Kozloff, E. N.**—The morphogenesis of Pyxinia crystalligera Frenzel, a gregarine parasite of Dermestes vulpinus Fabr. [79] 92: 39–77, ill. **McDermott, F. A.**—Photuris bethaniensis, a new lampyrid firefly. [151] 103: 35–37. **Neilson, C. L. and D. G. Finlayson.**—Notes on the biology of the tuber flea beetle, Epitrix tuberis Gentner (Chrysomelidae), in the interior of British Columbia. [43] 85: 31–32. **Park, O.**—An European pselaphid beetle collected in New York. [97] no. 117, 3 pp. **Sleeper, E. L.**—New genera and species of Curculionidae with a new species of Anthribidae. [106] 53: 113–20, ill. **Vité, J. P.**—(See Anatomy.) **Waterhouse, D. F.**—(See Anatomy.) **Young, F. N.**—A new Laccophilus from Florida, with notes on other species of the genus (Dytiscidae). [64] 36: 31–34, ill.

HYMENOPTERA—Adriaanse, A.—Ammophila campestris Latr. und Ammophila adriaansei Wilcke, ein Beitrag zur vergleichenden Verhaltensforschung (Sphecidae). [Behaviour, Leiden] 1: 1–34, 1947. **Alam, S. M.**—Studies on "Skeleto-muscular mechanism" of the male genitalia in Stenobracon deesae Cam. (Braconidae). [28] 2: 620–34, ill., 1952. **Barth, R.**—Zur Biologie der braunroten blütenameise Monomorium floricola. [100] 40: 40. **Beusekom, G. van.**—Some experiments on the optical orientation in Philanthus triangulum Fabr. (Sphecidae). [Behaviour, Leiden] 1: 196–226, 1948. **Borgmeier, T.**—(See Diptera.) **Brown, W. L., Jr.**—Characters and synonymies among the genera of ants. Pt. I. [67] no. 11: 1–13. **Brun, R.**—Das Zentralnervensystem von Teleutomyrmex schneideri Kutt. (Female) (Formicidae). [130] 25: 73–86, ill., 1952. **Burks, B. D.**—The genus Metacolus in North America (Chalcidoidea). [56] 55: 44. **Butler, C. G. and J. B. Free.**—The behaviour of worker honeybees at the hive entrance. [Behaviour, Leiden] 4: 262–92, ill., 1952. **Carthy, J. D.**—The orientation of two allied species of British ant. I. Visual direction finding in Acanthomyops (Lasius) niger. II. Odour trail laying and following in A. fulginosus. [Behaviour, Leiden] 3: 275–318, ill., 1951. **Chambers, V. H.**—(See General.) **Chauvin, R.**—Sur la reconstruction du nid chez les fourmis oecophylles (Oecophylla longinoda L.) (Formicidae). [Behaviour, Leiden] 4: 190–201, 1952. Le transport des proies chez les fourmis. Y-a-t-il entr'aide? (Formicidae). [Behaviour, Leiden] 2: 249–56, 1950. **Cole, A. C.**—Notes on the genus Leptothorax in New Mexico and a description of a new species (Formicidae). [56] 55: 27–30, ill. **Cumber, R. A.**—Some aspects of the biology and ecology of bumble-bees bearing upon the yields of red-clover seed in New Zealand. [N. Z. Jour. Sci. Tech.] 34: 227–40. **Deleurance, E. P.**—Étude du cycle biologique du couvain chez Polistes. [Behaviour, Leiden] 4: 104–115, 1952. **Domenichini, G.**—Morfologia, variabilità dei caratteri e speciografia dell'Anagyrus pseudococci Gir. (Chalcidoidea). [Boll. Zool. Agr. e Bach.] 18: 117–81, ill., 1952. **Edmunds, L. R.**—Some notes on the Evaniidae as household pests and as a factor in the control of roaches. [106] 53: 121–22. **Evans, H. E.**—The Mexican species of Allaporus (Pompilidae). [82] 26: 26–31. **Finlayson, L. H.**—Host preference of Cephalonomia waterstoni Gahan, a bethylid parasitoid of Laemophloeus species. [Behaviour, Leiden] 2: 275–316, ill., 1950. **Gurney, A. B.**—Notes on the biology and immature stages of a cricket parasite of the genus Rhopalosoma. [151] 103: 19–34, ill. **Höglund, G.**—

Spinnkörtelsystemets uppgift och funktion samt dess korrelation till hudens och tarmens utveckling hos Caliroa. [103] 30: 57–77, ill., 1950. **Hölldobler, K.**—(See General.) **Hurd, P. D.**—Notes on the melectine bees of Mexico (Anthophoridae). [82] 26: 35–37. **Kutter, H.**—Beitrag zur problemstellung der neueren Myrmekologie. [100] 40: 33. **Kuznezov, N.**—Un caso de evolucion eruptive, Eriopheidole symbiotica nov. gen. nov. sp. (Formicidae). [Parana. Mus. Entre Rios, Memorias] no. 20, 31 pp., ill., 1951. **Lecomte, J.**—Recherches sur le comportement agressif des ouvrieres d'Apis mellifica. [Behaviour, Leiden] 4: 60–66, 1951. **Le Masne, G.**—Observations sur la biologie de la fourmi Ponera eduardi Forel. La descendance des ouvrières fécondées par les mâles ergatoïdes (Formicidae). [2] 236: 1096–98. **MacGregor, E. G.**—Odour as a basis for orientated movement in ants. [Behaviour, Leiden] 1: 267–96, 1948. **Manning, F. J.**—Recent and fossil honey bees: some aspects of their cytology, phylogeny and evolution. [Proc. Linn. Soc. London] 163: 3–8, ill., 1952. **Pardi, L.**—Beobachtungen über das interindividuelle Verhalten bei Polistes gallicus. [Behaviour, Leiden] 1: 138–72, 1947. **and M. Cavalcanti.**—Esperienze sul meccanismo della monoginia funzionale in Polistes gallicus (L.) (Vespidae). [Boll. di Zool.] 18: 247–52, ill., 1951. **Schubart, O.**—(See Arachnida.) **Stumper, R.**—Über Schultz- und Trutzsekrete der Ameisen. [100] 40: 33–34, ill. **Thorpe, W. H.**—A note on detour experiments with Ammophila pubescens Curt (Sphecidae). [Behaviour, Leiden] 2: 257–63, ill., 1950. **Tsuneki, K.**—Ethnological studies on the Japanese species of Pemphredon (Sphecidae), with notes on their parasites, Ellampus spp. (Chrysididae). [Jour. Hokkaido Univ. Fac. Sci.] 11: 57–75, ill., 1952. **Waterhouse, F. L.**—(See Anatomy.)

Reviews

A TEXTBOOK OF ARTHROPOD ANATOMY, by R. E. Snodgrass. Ithaca, N. Y., Cornell University Press, Dec. 15, 1952. x + 363 pp. 88 figs. $6.00.

With the remark "arthropods are a group of related invertebrates, arthropodists, for the most part, are a group of unrelated vertebrates," R. E. Snodgrass introduces this text, the latest in his long series of able contributions to our knowledge of the structure of insects and their relatives. This clearly and interestingly written volume is a descriptive account of mainly the external anatomy of eleven major groups of arthropods. A chapter each is devoted to a discussion of the trilobites; Limulus, the king crabs; the fossil Eurypterids; the peculiar marine Pycnogonids; a scorpion, a tick, and spiders as representatives of the Arachnida; the primitive Tasmanian *Anaspides,* a crayfish, and the isopod *Ligyda* in the Crustacea; a member each of the four major groups of the centipedes or Chilopoda; examples of the two main divisions of the millipedes or Diplopoda; the Pauropoda; the Symphyla or garden centipedes; and in the insects, various species of Diplura and Thysanura and one pterygote, *Periplaneta.* Prefacing each chapter is a discussion of the general characteristics, biology, distribution, and probably relationship of the groups treated. Scattered throughout the text are approximately 650 illustrations distributed among 88 "figures" or plates, all executed in the author's well-known and inimitable clear style. The cockroach hind wing, Fig. 84 A, p. 319, is rather schematic and has evidently been drawn from an aberrant specimen, for it is incorrect in several details. No illustration of the fore wing or tegmen is given. However, the excellent figures and photomicrographs in Smart's recent paper (1951, Proc. Zool. Soc. London, vol. 121, pp. 501–509) will remedy this lack. Explanation of the lettering on the text-figures are, for the most part, given at the end of each chapter rather than under each collection of figures. This involves much turning and searching of pages and, when textual matter and figures are widely separated, sometimes by ten or twenty pages, may prove very exasperating to readers.

The author states he has attempted to evaluate the various theories relating to the ancestry of insects and the evolution of the arthropods and has come to the disconcerting conclusion that "the facts of arthropod structure are not consistent with any proposed theory of arthropod relationships." Many of the theories are succinctly demolished and dismissed and, although no substitute is actually proposed, nevertheless it is evident from comments scattered throughout the text that Snodgrass has probably formulated some definite ideas on the proper grouping of arthropods. The Xiphosurida and the fossil Eurypterida, for example, are completely dissociated from the Arachnida as well as from one another; and the centipedes are clearly separated as a class from the millipedes. Of particular interest to entomologists is the author's complete rejection of the conventional division of insects into the two customary groups: Apterygota and Pterygota. Instead, as others have pointed out in recent years, he shows that the endognath Collembola, Protura, and Diplura form one loose association and that the ectognath Thysanura (s. s.) and pterygotes another very compact and closely related group.

This attractively printed and well-bound text will be invaluable to both students and teachers of zoology and entomology. —V. S. L. PATE.

THE ANTS OF CALIFORNIA, by Thomas W. Cook. (Pacific Books, Palo Alto, California.) xiv + 462 pp., 92 figs. 1953. Price, $10.

The appearance of this book has been awaited by American ant specialists with interest, not to say anxiety, for several years. About the best one can say for it is that it introduces very few new names into the literature. Four new species are described and figured: *Proc[e]ratium californicum, Pogonomyrmex nitratus* (also referred to as *P. californicus nitratus*), *Pogonomyrmex spadix* (also referred to as *P. barbatus spadix* and *P. barbatus spadex*), and *Lasius helvus* (also referred to as *L. helveolus*). The last three of these appear to be safely considered as synonyms of familiar species long known from California, and the *Proceratium,* described from a single male, is enigmatic in more ways than one.

The descriptive material in the book is almost entirely composed of direct copies from the original or subsequent descriptions by other authors, and is largely obsolete for modern purposes. In the preface the author mentions W. S. Creighton's important revision, *The Ants of North America*, and lauds the advances made in the elimination of numerous synonyms and in other simplifications of the taxonomy of our ants, yet Mr. Cook's text reveals scarcely any sign that he has incorporated these advances in his thinking. Most of the old synonyms are without justification disinterred and faithfully listed. The book is profusely and often irrelevantly illustrated, a large part of the drawings being very closely approximate line-for-line copies of figures which first appeared in various works by M. R. Smith, W. S. Creighton, W. M. Wheeler, and others. One searches in vain for a direct credit for these figures, instead finding the following curious statement in the Acknowledgments section: "These drawings follow the modern style of modeling insect drawings as exemplified by the work of the artists Sara H. Deborg [Debord] and A. D. Cushman in some of M. R. Smith's works; the technique of Shirley Risser in making open-line drawings, as in Dr. William S. Creighton's *Ants of North America,* has been followed in some instances."

This work amounts to an indiscriminate compilation of the literature concerning Californian (and quite a few non-Californian) ants. The locality data are surprisingly scanty in view of the excellent collecting opportunities in California. The correspondence of Cook's records (stated without collector's name in many cases) with old series in the Wheeler Collection at Harvard is remarkably extensive. Many of the records may have been secured during the author's fleeting sojourn at Harvard as a graduate student.

In matters of arrangement, spelling, and captioning, abundant confusion exists in this book. On page 208, for instance, there are given two figures (after Smith) of *"Strumigenys" rostrata* Emery, although, as the previous page testifies, this species does not occur in California and does not belong to the genus *Strumigenys.* On page 330, figures of four species of *Lasius* are given; these are oriented in such a way that in two of them all conventional diagnostic characters are hidden, rendering identification impossible, while in the other two, enough can be seen to disclose that *"Lasius umbratus subumbratus"* (*L. subumbratus, fide* Creighton) is probably *L. umbratus,* and *"L. interjectus californicus"* (*Acanthomyops claviger californicus, fide* Creighton) is probably *L. neoniger.* In general, the figures original to the book show few of the useful key characters, are often grossly out of scale in individual plates, and are certain to be misleading to the novice. A key in the usual sense is lacking.

Cook presents practically nothing of value for the myrmecologist and much that will hopelessly puzzle the layman residing in California who wants to learn about the ants of his State. In handling this outwardly handsome volume, one cannot help but think of the worthwhile and basic manuscripts on ant biology, the publication of which has been delayed or even prevented for lack of funds, artistic assistance, and working time. It is obvious that *The Ants of California* has wasted a great amount of all three. It is the hope of the present reviewers that somewhat less effort will be wasted in trying to use it for the study of California ants. Fortunately, Creighton's above-mentioned book covers the subject with reasonable thoroughness.—W. L. Brown and E. O. Wilson.

List of Titles of Publications Referred to by Numbers in Entomological Literature in Entomological News.

1. Academia Brasileira de Ciencias, Anais. Rio de Janeiro.
2. Académie des Sciences, Comptes Rendus. Paris.
3. Academy of Natural Sciences of Philadelphia. Notulae Naturae.
4. Academy of Natural Sciences of Philadelphia. Proceedings.
5. Acta Biologica Venezuelica. Caracas.
6. Acta Biotheoretica. Leiden, Netherlands.
7. Acta Zoologica (Int. tidskrift för Zoologi). Stockholm.
8. Acta Zoologica Lilloana. Tucuman, Argentina.
9. American Entomological Society, Transactions. Philadelphia.
10. American Journal of Tropical Medicine & Hygiene. Baltimore, Md.
11. American Microscopical Society, Transactions. Menasha, Wisc.
12. American Midland Naturalist. Notre Dame, Ind.
13. American Museum Novitates. New York.
14. American Museum of Natural History, Bulletin. New York.
15. American Naturalist. Lancaster, Pa.
16. Anatomical Record. Philadelphia.
17. Annales de Parasitologie humaine et comparée. Paris.
18. Annales des Sciences Naturelles, Zoologie. Paris.
19. Annals and Magazine of Natural History. London.
20. Annals of Applied Biology. London.
21. Annals of Tropical Medicine and Parasitology. Liverpool.
22. Anti-locust Bulletin. London.
23. Archives de Zoologie Expérimentale et Générale. Paris.
24. Archives de Zoologie Expérimentale et Générale. Notes et Revue.
25. Arkiv för Zoologi. K. Svenska Vetenskapsakademien, Stockholm.
26. Arthropoda. Asoc. Argent. Artropodologia. Buenos Aires.
27. Australian Journal of Scientific Research, Ser. B. Canberra.
28. Beiträge zur Entomologie (Deutsch. Ent. Inst.) Berlin.
29. Beiträge zur Fauna Perus. Jena.
30. Biological Bulletin. Woods Hole, Mass.
31. Biological Society of Washington, Proceedings. Washington, D. C.
32. Boletin de Entomologia Venezolana. Caracas.
33. Bombay Natural History Society, Journal.
34. Bonner Zoologische Beiträge. Bonn, Germany.
35. British Museum (Nat. Hist.), Bulletin. Entomology.
36. Brooklyn Entomological Society, Bulletin.
37. Broteria, Ser. trimestral. Lisbon, Portugal.
38. Buenos Aires. Instituto Nac. Investig. Ciencias Nat. Zoologica.
39. Bulletin Biologique de la France et de la Belgique. Paris.
40. Bulletin of Entomological Research. London.
41. California Insect Survey, Bulletin. Berkeley, Cal.
42. California Univ. Publications in Entomology. Berkeley.
43. Canadian Entomologist. Ottawa, Ont.
44. Canadian Journal of Zoology. Ottawa, Canada.
45. Ceskoslovenska Spolecnost Ent., Casopis. (Acta Soc. Ent.) Prague.
46. Ceylon Journal of Science, Sect. B. Colombo.
47. Coleopterists' Bulletin. Arlington, Va.
48. Dusenia. Curitiba, Parana, Brazil.
49. Ecological Monographs. Durham, N. C.
50. Ecology. Durham, N. C.
51. Entomologica Americana. Brooklyn Ent. Soc.
52. Entomological Society of America, Annals. Columbus, Ohio.

53. Entomological Society of British Columbia, Proceedings. Vernon.
54. Entomological Society of Ontario, Annual Report. Guelph.
55. Entomological Society of Southern Africa, Journal. Pretoria.
56. Entomological Society of Washington, Proceedings. Washington, D. C.
57. Entomologische Berichten. (Ned. Ent. Ver.) Amsterdam.
58. The Entomologist. London.
59. L'Entomologiste. Paris.
60. Entomologist's Monthly Magazine. London.
61. Eos; Revista Española de Entomologia. Madrid.
62. Evolution. New York.
63. Faune de l'Union Française (Formerly Faune de l'Empire Français).
64. Florida Entomologist. Gainesville.
65. Folia Universitaria. Cochabamba, Bolivia.
66. Great Basin Naturalist. Provo, Utah.
67. Harvard Museum of Comparative Zool. Breviora. Cambridge, Mass.
68. Harvard Museum of Comparative Zoology, Bulletin. Cambridge, Mass.
69. Hawaiian Entomological Society, Proceedings. Honolulu.
70. Hilgardia (California Agr. Expt. Sta.). Berkeley.
71. Illinois State Academy of Sciences, Transactions. Springfield.
72. Institut Scientifique de Madagascar, Mémoires, Ser. E. Tananarive.
73. Iowa State College Journal of Science. Ames.
74. Journal of Animal Ecology. London.
75. Journal of Cellular and Comparative Physiology. Philadelphia.
76. Journal of Economic Entomology. Menasha, Wisconsin.
77. Journal of Experimental Biology. London.
78. Journal of Experimental Zoology. Philadelphia.
79. Journal of Morphology. Philadelphia.
80. Journal of Parasitology. Lancaster, Pa.
81. Kansas Academy of Sciences, Transactions. Manhattan.
82. Kansas Entomological Society, Journal. Lawrence.
83. Kansas University. Science Bulletins. Lawrence.
84. Lambillionea (Union Ent. Belge). Brussels.
85. Lepidopterists' News. New Haven, Conn.
86. Louisiana Academy of Sciences, Proceedings. New Orleans.
87. Mexico. Escuela Nacional de Ciencias Biologicas, Anales.
88. Mexico Univ. Instituto de Biologia, Anales. Mexico City.
89. Michigan Univ. Museum of Zoology, Occasional Papers. Ann Arbor.
90. Microentomology. Stanford University, California.
91. Mocambique; Documentario Trimestral. Lourenço Marques.
92. Mosquito News. New Brunswick, N. J.
93. Musei Zoologici Polonici, Annales. Warsaw, Poland.
94. Musei Zoologici Polonici. Fragmenta Faunistica. Warsaw, Poland.
95. Naples Univ. Instituto e Museo Zoologico, Annuario.
96. National Academy of Sciences, Proceedings. Washington, D. C.
97. Natural History Miscellanea (Chicago Academy of Sciences).
98. Nature. London.
99. Naturforschende Gesellschaft Zurich, Vierteljahrsschrift.
100. Die Naturwissenschaften. Berlin.
101. New York Entomological Society, Journal.
102. Norsk Entomologisk Tidsskrift. Oslo.
103. Notulae Entomologicae. Helsingfors, Finland.
104. Oesterreiche Zoologische Zeitschrift. Vienna.
105. Office National Anti-acridien, Bulletin. Paris.
106. Ohio Journal of Science. Columbus.
107. Oikos; Acta Ecologica Scandinavica. Copenhagen, Denmark.

108. Opuscula Entomologica. Lund, Sweden.
109. Oyo-Kontyu (Nippon Society of Applied Entomology). Tokyo.
110. Pacific Science. Honolulu.
111. Pan-Pacific Entomologist. San Francisco, Cal.
112. Parasitology. London.
113. Physiological Zoology. Chicago.
114. Polskie Pismo Entomologiczne. Wroclaw, Poland.
115. Psyche; A Journal of Entomology. Cambridge, Mass.
116. Quarterly Journal of Microscopical Science. London.
117. Revista Brasileira de Biologia. Rio de Janeiro.
118. Revista de Investigaciones Agricultura. (Argent. Min. Agr.) B. A.
119. Revue Française de Lepidopterologie. Douelle, France.
120. Revue Suisse de Zoologie. Geneva, Switzerland.
121. Rio de Janeiro. Instituto Oswaldo Cruz, Memorias.
122. Rio de Janeiro. Museu Nacional do Brasil, Boletim, Zool.
123. Rivista di Parassitologia. Rome, Italy.
124. Royal Entomological Society of London, Proceedings, Ser. A.
125. Royal Entomological Society of London, Proceedings, Ser. B.
126. Royal Entomological Society of London, Transactions.
127. Royal Society of London, Proceedings, Ser. B.
128. São Paulo, Brazil. Depart. Zool., Secr. Agr., Papéis Avulsos.
129. São Paulo, Brazil. Instituto Biologico, Arquivos.
130. Schweizerische Entomologische Gesellschaft, Mitteilungen. Bern.
131. Smithsonian Miscellaneous Collections. Washington, D. C.
132. Sociedad Cientifica Argentina, Anales. Buenos Aires.
133. Sociedad Entomológica Argentina, Revista. Buenos Aires.
134. Sociedad Mexicana de Historia Natural, Revista. Mexico City.
135. Société d'Histoire Naturelle de Toulouse, Bulletin.
136. Société Entomologique de Belgique, Bulletin et Annales. Brussels.
137. Société Entomologique de France, Annales. Paris.
138. Société Entomologique de France, Bulletin. Paris.
139. Société Fouad I d'Entomologie, Bulletin. Cairo, Egypt.
140. Société Linneenne Lyon, Bulletin Mensuel.
141. Société Zoologique de France, Bulletin. Paris.
142. Society for British Entomology, Journal. Bournemouth, England.
143. Society for British Entomology, Transactions. Bournemouth, Eng.
144. South London Entomological & Nat. Hist. Society, Proc. & Trans.
145. Southern California Academy of Sciences, Bulletin. Los Angeles.
146. Systematic Zoology. Washington, D. C.
147. Tennessee Academy of Sciences, Journal. Nashville.
148. Texas Journal of Science. College Station, Texas.
149. Tijdschrift voor Entomologie. Amsterdam.
150. Tohoku University. Science Reports, Ser. 4. Tohoku, Japan.
151. U. S. National Museum, Proceedings. Washington, D. C.
152. Washington Academy of Sciences, Journal. Washington, D. C.
153. Wasmann Journal of Biology. San Francisco, Cal.
154. Zoologica. New York.
155. Zoological Society of Bengal, Proceedings. Calcutta, India.
156. Zoological Society of London, Proceedings.
157. Zoologische Jahrbücher. Abt. Anatomie u. Ontogenie. Jena.
158. Zoologische Jahrbücher. Abt. Systematik, Ökologie u. Geogr. Jena.
159. Zoologische Jahrbücher. Abt. allg. Zoologie u. Physiologie. Jena.
160. Zoologischer Anzeiger. Leipzig.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

American Sarcophagidae—wanted for identification. H. R. Dodge, P.O. Box 185, Chamblee, Georgia.

German lepidopterist wishes to correspond and receive live material (eggs and pupae) in exchange for dried imagoes. Johannes Reichel, Koenigsberg, Krs. Wetzlar 16, Germany.

For exchange—The periodic Cicada, T. septendecim. Desire Lepid., espec. Papil., Sphing. & Speyeria. Also Col., espec. Ceramb. & Lucan. John W. Morris, 2704 Genesee St., Syracuse 9, N. Y.

Cynipid and Itonidid galls—American species wanted; purchase or exchange for British species. Fresh or dried. D. Leatherdale, F.R.E.S., Old Woodstock, Oxford, England.

Wanted—Reprints or papers concerning insects taken in Alaska for inclusion in list of Alaskan insects. R. H. Washburn, Alaska Experiment Station, Palmer, Alaska.

Conopidae of the World wanted. Will pay 10¢ to $1.00 for pinned and labelled specimens. S. Camras, 4407 N. Milwaukee Ave., Chicago 30, Illinois.

Anisoptera—Nearctic sp. wanted for exchange, espec. Ophiog., Arigom., Aeschna, Neurocor., Somatoc., Cordulia, Dorocor., Leucor. R. D. Cuyler, N. C. State College, Raleigh, N. C.

Bembicini and Stizini (Hym., Sphec.) of New World wanted for revis. study. Will return upon request or at end of project. James E. Gillaspy, Dept. of Zoology, Univ. Texas, Austin 12, Texas.

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stipulations of the original generic diagnosis, then it becomes automatically the type of the genus. Because Sager's *fulva* does meet these requirements and inasmuch as no other species had been referred to *Strigamia* between the time of its proposal in 1842 and the time of Sagar's action in 1856, *fulva* is the type of *Strigamia*.

In 1862[4] H. C. Wood described a number of new species which he correctly referred to the Gray genus. He had evidently examined Sager's typical specimens at the Academy of Natural Sciences in Philadelphia and consequently was able to diagnose the nature of the genus correctly.

Overlooking Koch's *Linotaenia,* Bergsöe and Meinert in 1866[5] proposed still another generic name, *Scolioplanes,* for the reception of *acuminata, crassipes,* and *maritima,* the first two of which had already been placed as synonyms in *Linotaenia* by Koch, a fact that Bergsöe and Meinert, curiously enough, were aware of at the time. It is even more puzzling that the European authors have continued to use *Scolioplanes* since the time of its proposal, even though it is obviously a junior synonym of *Linotaenia* Koch. In 1890[6] Pocock, disregarding the claims of *Strigamia,* decried the continued use of the Bergsöe and Meinert name and at the same time stated that *rosulans* Koch [= *acuminata* Leach] was the type of *Linotaenia* Koch. I am aware of no earlier type designation so that presumably the genotype of *Linotaenia* was fixed at that time.

In a paper published posthumously in 1893[7] Bollman reviewed the entire problem, and, completely ignoring *Strigamia,* concluded that the only valid name was *Linotaenia.* Subsequently all American workers, except O. F. Cook, adopted *Linotaenia,* whereas almost all Europeans viewed *Scolioplanes* as the valid name. The type of the latter genus was fixed in 1895[8] by O. F. Cook who cited *maritima* (Leach) as its genotype.

---

[4] Journ. Acad. Nat. Sci. Phila., (n.s.) V (1862).

[5] Naturh. Tidsskr., (3) IV, p. 98 (1866).

[6] Ann. Mus. Civ. Storia Genova, (2) IX, p. 8 (1890).

[7] Bull. U. S. Nat. Mus., XLVI, p. 142 (1893).

[8] Amer. Natural., XXIX, p. 866 (1895).

In that same year Cook interjected still another source of confusion when he reviewed the whole matter once again and concluded, as had Sseliwanoff in 1881,[9] that the European species, properly referred to *Linotaenia,* really were not congeneric with some of the North American forms. Discounting the validity of *Strigamia* on the basis that: ". . . there would seem to be an insurmountable obstacle to the use of his [= Gray's] name in the fact that he published no species under it . . .," Cook of course found no other generic name that was available, since *Scolioplanes* was a synonym of *Linotaenia* and the American forms could not be referred to either anyway in his estimation, so he proposed another name, *Tomotaenia,*[10] and cited *Strigamia parviceps* Wood, 1862 as its genotype. This name was subsequently consigned to an appropriate Avernus in synonymy by the American proponents of *Linotaenia* and the European mainstays of *Scolioplanes.*

When the first serious attempt at a world monograph of the Geophilomorpha was undertaken in 1903 by the late Carl Graf Attems, he discounted *Strigamia, Linotaenia,* and *Tomotaenia* and placed the species previously referred to them by American workers in *Scolioplanes.* Subsequently both he and K. W. Verhoeff, and many others as well, continued to use the Bergsöe and Meinert name for all of the forms involved.

In 1935 Verhoeff erected a new subgenus, *Protoplanes,* under *Scolioplanes.* He pointed out that forms referable to his new group possess a divided ultimate pedal pretergite, whereas the nominate subgeneric forms do not. Regarding *Protoplanes* as essentially Asiatic in contrast to the typically European *Scolioplanes,* he referred *maritimus* (Leach), *hirsutipes* Attems, and *herzgowinensis* sp.n. to it; no type, of course, was established. It is evident now that many of the northeastern North American species are members of Verhoeff's Asiatic subgenus. Among these species is the true [11] *fulva,* the type of *Strigamia.* It follows, then, that Verhoeff's *Protoplanes* is a synonym of Gray's nominate subgenus, *Strigamia,* and that *Scolioplanes,* as a subgenus, is still a synonym of *Linotaenia* Koch. Hence, the following scheme obtains: the only valid generic name is *Strigamia* Gray. It includes two subgenera, the typical subgenus, *Strigamia* Gray, and *Linotaenia* Koch.

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[9] Mem. Acad. St. Petersburg, XL (7), p. 12 (1881).

[10] Amer. Natural., XXIX, p. 866 (1895).

[11] Sager's types at Philadelphia, which I have examined, all possess divided ultimate pedal pretergites. The large, brilliant red centipedes, which have been erroneously referred to *fulva,* are not conspecific with the

The complexities of the situation necessitate a conspectus of the involved generic names.

Linotaenia C. L. Koch, 1847.
  TYPE: *Linotaenia rosulans* C. L. Koch, 1847 [= *Strigamia* (*Linotaenia*) *acuminata* (Leach)]. (Subsequent designation of Pocock, Ann. Mus. Civ. Storia Genova, (2) IX, p. 8 (1890).)
Scolioplanes Bergsöe and Meinert, 1866.
  TYPE: *Geophilus maritimus* Leach, 1817 [= *Strigamia* (*Strigamia*) *maritima* (Leach)]. (Subsequent designation of Cook, Amer. Natural., XXIX, p. 866, and Proc. U. S. Nat. Mus., XVIII, p. 75 (1895).)
Protoplanes Verhoeff, 1935.
  TYPE: *Scolioplanes hirsutipes* Attems, 1927 [= *Strigamia* (*Strigamia*) *hirsutipes* (Attems)]. (Present designation.)
Tomotaenia Cook, 1895.
  TYPE: *Strigamia parviceps* Wood, 1862 [= *Strigamia parviceps* Wood]. (Original designation.)

Concerning Charmatometra bakeri (Kirkaldy) (Hemiptera: Gerridæ) [1]

By H. B. HUNGERFORD, Lawrence, Kansas

Kirkaldy [2] described the above under the name *Brachymetra bakeri* from a single female specimen that came from Colombia,

---

Sager types. They are, I am convinced, referable to Woods' despisèd and rejectèd species *bothriopa* which was described in 1862. In a paper soon to be published these two very common northeastern species will be characterized in detail.

[1] Contribution No. 815, Department of Entomology, University of Kansas.

[2] Kirkaldy, G. W., 1898. The Entomologist, XXXI, pp. 101–102.

S. A. The specimen was 13 mm. long, twice the length of *Brachymetra albinervus* (Am. Serv.) with which he compared it. The following year he [3] examined two more specimens (2 ♂♂ Ecuador) from the Royal Museum of Belgium and concluded that a new genus Charmatometra should be set up for *B. bakeri* Kirkaldy. Since then Drake and Harris,[4] 1935, recorded an apterous female from Bogota and in 1941 [5] "several specimens from Venezuela" without adding to or correcting Kirkaldy's original description.

Since the Kirkaldy type is now in the Francis Huntington Snow Collection of the University of Kansas and the original description is inaccurate and incomplete, it is necessary to correct and supplement the description of both genus and species. Besides the imperfect type I have before me the following:

Colombia, S. A., San Barnardo, Jan. 1939. F. W. Urban. 3 ♂♂, 2 ♀♀;
Venezuela, S. A., Aragua, Jan. 17, 1952. Fred H. Test. 1 ♂ (winged), 1 ♀;
Venezuela, S. A., Near Maracay, Dec. 3, 1951. Fred H. Test. 1 ♂;
Venezuela, S. A., Rancho Grande, Nov. 22, 1951. Fred H. Test. 1 ♂ (winged), 1 ♀.

The two males labeled "winged" have the high shouldered pronotum characteristic of winged forms but only the broken bases of the wings are present.

In describing the genus Charmatometra Kirkaldy says: "Length of head twice as great as its width at the base, much wider at the base than between the eyes anteriorly." Even ignoring the eyes as part of the head width at base, the length of the head is to its width as 3:2.3. Of the antennae he says: "First segment subequal to the other three segments together four times as long as the second, third three-fifths longer than the second, a little longer

---

[3] Kirkaldy, G. W., 1899. Annales de la Soc. Entom. de Belgique, XLIII, pp. 509–510.

[4] Drake, C. J. and Harris, H. M., 1935. Arkiv För Zoologi, XXVIII B, p. 3.

[5] Drake, C. J. and Harris, H. M., 1941. Iowa State College Jl. of Science, XV, No. 3, p. 240.

than the fourth; there is a small node between the second and third segments." Actually the first segment of antenna is plainly shorter than other three together (130 : 150 +). The first segment is not four times as long as the second. In the type the first segment is to the second as 170 : 50.

There is nothing in Kirkaldy's generic description to justify its separation from Brachymetra. However the species *C. bakeri* is considerably larger than any described Brachymetra; the first tarsal segment of the front leg is plainly longer than the second, while in all Brachymetra it is plainly shorter; the front tibia is conspicuously expanded at its tips, which is broadly excavate on its mesal surface and sulcate on the outer surface while in Brachymetra the tibia is but little expanded; the middle and hind femora are considerably longer than the body whereas in Brachymetra they are but slightly, if any, longer. Therefore I am recognizing Charmatometra Kirkaldy as a genus.

Kirkaldy's two descriptions of *C. bakeri* are not quite accurate. The front femora are not "cylindric" but thicker in one diameter than the other. His measurements of antennal and leg segments are also misleading. There are variations to be sure but the description should agree with the type at least.

The description states that the first antennal segment is four times as long as the second and in the generic description above that it is subequal to the other three segments together. Here are the relative lengths of the antennal segments of the type and seven other specimens.

	1st	2nd	3rd	4th
Type ♀	170	50		
♂	170	55		
♀	150	50		
♀	145	55		
♂	140	42	64	56
♂	130	40	60	57
♀	130	37	58	55
♂	120	42	60	55

None of the above has the first segment four times as long as the second, and the last four indicate that the last three segments are not subequal to the first. In his redescription of *B. bakeri* Kirkaldy says: "Intermediate and posterior femora subequal; intermediate femur two-thirds longer than tibia, the latter five times as long as tarsus." Here are the segmental proportions of the middle leg of a male: Femur: tibia: 1st tarsal: 2nd tarsal: : 40: 33: 8: 1.9. In this specimen the tibia is three plus times as long as the tarsus instead of five times. He also says: "Posterior femur about three-fourths longer than the tibia, the latter ten and one quarter times as long as the first segment of tarsus." The tibiae are difficult to measure accurately but here are the proportions of the hind leg of a male: Femur: tibia: 1st tarsal: 2nd tarsal: : 40: 24: 3: 1.6. The tibia is not ten times as long as the first tarsal segment! It is only eight times as long.

Perhaps with these notes it will be possible to recognize *Charmatometra bakeri* Kirkaldy.

Notice to Collectors in National Parks

A recent action to simplify procedures governing the collection of scientific materials in areas administered by the National Park Service is of interest to entomologists.

Formerly, in order to collect insects and arachnids, it has been necessary for entomologists, other than federal employees, to qualify, through appointment by the Department of the Interior, as collaborators without compensation. This involved considerable paper work and delay, both for the applicant and the Government.

The new procedure, authority for which is set forth in *The Federal Register* of May 15, 1953 (18 FR 2831, 2832), excepts the collection of insects and arachnids from the federal employment requirement. It will now be possible for qualified entomologists to submit a simple application form by mail or in person to the Superintendent of the national park or monument concerned who is empowered to issue permits to make collections for scientific purposes.

The interests of science have been served well by regulations intended to preserve in the national parks and monuments a maximum of as nearly as possible undisturbed natural biological associations. Collection of specimens is limited to legitimate scientific collection of such nature as to have no measurable adverse effect upon the biological values involved.

A Second Case of Lacebug Bite (Hemiptera: Tingidae)

Although numerous species of hemipterons have been reported to inflict bites upon human beings, most of them have been predacious forms, and only recently have the phytophagous lacebugs been added to the list. Sailer (1945, Journ. Kansas Ent. Soc., v. 18) gives a first-hand account of having been bitten repeatedly by *Corythucha cydoniae* (Fitch) at Washington, D. C.; this seems to be the only instance in the literature relating to a member of the Tingidae.

It is now possible to put on record notice of the bite of a second species of tingid, *Corythucha ciliata* (Say), the normal host of which is the sycamore tree. On June 17, 1950, while reading on the front porch of my home at Clifton Forge, Virginia, I became conscious of a slight burning sensation on the back of my left hand, not dissimilar in effect to the bite of a mosquito. Investigation revealed the presence of a specimen of *ciliata*, busily engaged in sinking its beak into my skin. Curious about the outcome, and admiring the ambition of such a tiny creature, I suffered it to proceed, unmolested. After a few minutes it withdrew its beak and, just as did the specimen of *cydoniae* in the account cited above, cast about for another likely spot to probe. Lacking Dr. Sailer's forbearance, however, I interrupted the activities and blew the lacebug away. In my case, there was no particular itching sensation—rather a burning one—and the bite was commemorated by a red spot which persisted for more than a week.

Comparatively speaking, the lacebug bite was somewhat less painful than those inflicted by the common anthocorid *Orius insidiosus,* a much smaller species. Being an entomophagous form, however, *Orius* is probably endowed with a much more potent salivary secretion.

There remains unanswered the question of what manner of spiritual or material satisfaction rewards the lacebugs from their ventures into anthropophagism.

RICHARD L. HOFFMAN

Current Entomological Literature

Compiled by VENIA T. PHILLIPS, Librarian

Academy of Natural Sciences of Philadelphia

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania pertaining to entomology, including all arthropods except Crustacea. Coverage will be world-wide as regards major contributions to systematics as well as for all papers on morphology, physiology, embryology, etc. In addition, for species from the Americas and the Pacific (Nearctic, Neotropical and Polynesian regions) all minor contributions to taxonomy, distribution, etc., will also be recorded.

This list gives references of the year 1953 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

GENERAL—Bergold, G. H.—On the nomenclature and classification of insect viruses. [Ann. N. Y. Acad. Sci.] 56: 495–516, ill. **Black, L. M.**—Viruses that reproduce in plants and insects. [Ann. N. Y. Acad. Sci.] 56: 398–413. **Chabaud, A. G. and M.-T. Choquet.**—Allométrie des variants sexuels chez les Ixodidae. [24] 89: 140–46, ill., 1952. **Chilson, L. M.**—Insect records from Johnston Island. [69] 15: 81–84. **Davis, C. J.**—New host and insect records from the Island of Hawaii. [69] 15: 85–86. **Fagel, G.**—À propos de description. . . . [136] 88: 286–88, ill., 1952. **Given, B. B.**—General report on a search for parasites of Melolonthinae in Australia. [New Zealand Jour. Sci. Tech., Ser. B] 34: 322–40, ill. **Golbach, R.**—Notas sobre algunos insectos teratológicos. [8] 10: 189–98, ill., 1952. **Janssens, E.**—Zoogéographie et convergence. (Considers Leptogastrinae and Trechinae.) [Bull. Inst. Roy. Sci. Nat. Belg.] 28, no. 51, 21 pp., ill., 1952. **Knipling, E. F.**—The greater hazard—insects or insecticides. [76] 46: 1–7. **Knudsen, J. P.**—A new method for storing papered Lepidoptera. (Freezing.) [85] 7: 27. **Krauss, N. L. H.**—Insects and other invertebrates from Palmyra Atoll and Christmas Island. [69] 15: 217–20. Notes on insects associated with Lantana in Cuba. [69] 15: 123–25. **Lees, A. D.**—Resistance and susceptibility of plants to insect attack. [Science Progress] 41: 316–20. **Nachtwey, R.**—L'instinct chez les insectes, traduit de l'allemand par Odette Amson. Hachette, Paris, 1952, 224 pp., 47 figs. (Review in [Rev. franc. d'ent.] 20: 87–88.) **Sabro-**

sky, C. W.—How many insects are there? [146] 2: 31–36. **Sarma, P. S.**—Easy technique of dissecting the mouth-parts of sucking-lice (Anoplura). [Current Science] 22: 47. **Schilder, F. A.**—Einführung in die Biotaxonomie (Formenkreislehre) ; die Entstehung der Arten durch räumlichw Sonderung. Jena, G. Fischer, 1952, 162 pp., ill. (Review by S. G. Kiriakoff [136] 88: 316, 1952.) **Steinhaus, E. A.**—Taxonomy of insect viruses. [Ann. N. Y. Acad. Sci.] 56: 517–30, ill. **Usinger, R. L., and I. La Rivers.**—The insect life of Arno Atoll, Marshall Islands. [Atoll Research Bull.] no. 15, 28 pp. **Weber, P. W.**—Recent liberations of beneficial insects in Hawaii—II. [69] 15: 127–30. **Weiss, H. B.**—Thirteen entomological pamphlets, 1655–1846. [101] 60: 221–24, 1952.

BIOGRAPHIES, OBITUARIES—Alluaud, Charles, 1861–1949.—(Biogr. with portrait and bibl.) by R. Jeannel. [137] 121: 1–22, 1952. **Blair, Kenneth Gloyne,** 1882–1952.—Obituary, with portrait, by B. M. Hobby. [142] 4: 126–27. **Doets, Cornelis,** 1894–1952.—Obituary by A. Diakonoff. [85] 7: 24. **Hoffmann, Emil.**—Biographical notice, with portrait on his 75th birthday, by H. Reisser. [Zeit. Wiener Ent. Ges.] 37: 137–38, 1952. **King, Joseph Lyonel,** 1888–1952.—(Obit. with port.) [76] 46: 189. **Schäffer, Jacob Christian,** 1718–1790.—Biography by H. B. Weiss. [101] 60: 241–44, 1952. **Talbot, George, 1882–1952.**—Obituary by C. L. Remington. [85] 7: 24. **Walton, William Randolph,** 1873–1952.—(Obit., with port.) by J. S. Wade, W. A. Baker and F. W. Poos. [56] 55: 103–08. **Weinman, Carl John,** 1915–1952.—(Obit. with port.) by H. B. Mills. [76] 46: 188.

ANATOMY, PHYSIOLOGY, MEDICAL—Chadbourne, D. S. and C. F. Rainwater.—Histological effects of calcium arsenates on larval tissues of the bollworm (Noctuidae). [76] 46: 44–48, ill. **Christensen, P. J. H.**—Embryology. (See Lepidoptera.) **Clark, E. W.**—The calcium and magnesium content in the hemolymph of certain insects. [113] 26: 101–07. **Eassa, Y. E. E.**—The development of imaginal buds in the head of Pieris brassicae Linn. [126] 103: 39–50, ill. **Gebhardt, H.**—Die Lage der wichtigsten Thermorezeptoren bei einigen Insekten. [159] 63: 558–92. **Gilbert, I. H., M. D. Couch and W. C. McDuffie.**—Development of resistance to insecticides in natural populations of house flies. [76] 46: 48–50. **Goldschmidt, R.**—Heredity within a sex-controlled structure of Drosophila. [78] 122: 53–95.

Harnish, O.—Studien zum Gaswechsel der Larva von Prodiamesa olivacea Meig. [Biol. Zentralbl.] 72: 152–61. **Holm, A.**—Experimentelle untersuchungen über die entwicklung und entwicklungsphysiologie des spinnenembryos (Araneida). [Zoologiska bidrag fran Uppsala] 29: 293–424, ill., 1952. **Hsu, W. S.**—The origin of proteid yolk. (See Diptera.) **Kennington, G. S.**—The effects of reduced atmospheric pressure on populations of Tribolium castaneum and Tribolium confusum. [113] 26: 179–203. **Lees, A. D.**—New aspects of bee behaviour. [Science Progress] 41: 313–16. **Levenbook, L.**—The variation in phosphorus compounds during metamorphosis of the blowfly, Calliphora erythrocephala Meig. [75] 41: 313–34. **Lhoste, J.**—Données histo-physiologiques sur les cellules neurosécrétrices céphaliques et le complexe rétrocérébral de Forficula auricularia L. [24] 89: 169–83, ill., 1952. **Makino, S. and K. Saito.**—Results of gonadectomy and gonadal transplantation in the sex races of Lymantria dispar. [85] 7: 7–8. **Nater, H.**—Vergleichend-morphologische Untersuchung des äusseren Geschlechtsapparates innerhalb der Gattung Drosophila. [158] 81: 437–86, 1952. **Petersen, B. and R. Weber.**—A comparison between growth ratio and geographic variation on allometry in Omocestus viridulus L. female. [Zoologiska Bidrag fran Uppsala] 29: 39–43, 1949. **Pielou, D. P. and R. F. Glasser.**—Survival of Macrocentrus ancylivorus Roh., a parasite of the Oriental fruit moth, on different concentrations of various sugar solutions. [44] 31: 121–24. **Possompès, B.**—Recherches expérimentales sur le déterminisme de la métamorphose de Calliphora erythrocephala Meig. [23] 89: 203–364, ill., 1952. **Tanada, Y.**—Viruses, microsporidea, and bacilli. (See Lepidoptera.) **Wigglesworth, V. B.**—The origin of sensory neurones in an insect Rhodnius prolixus. [116] 94: 93–112, ill.

ARACHNIDA AND MYRIOPODA—Birabén, M.—"Fernandezina," nuevo genero de Palpimanidae (Araneae). [8] 12: 545–49, ill., 1951. **Chaubaud and Choquet.**—Ixodidae. (See General.) **Fuller, H. S.**—The mite larvae of the family Trombiculidae in the Oudemans collection: taxonomy and medical importance. [Zool. Verhand., Leiden] No. 18, 261 pp., ill. 1952. **Gering, R. L.**—Structure and function of the genitalia in some American agelenid spiders. [131] 121: no. 4, 84 pp., ill. **Goodnight, C. J. and M. L.**—The opilionid fauna of Chiapas, Mexico, and adjacent areas

(Arachnoidea, Opiliones). [13] 1610, 81 pp., ill. **Greenberg, B.**—New Labidostommidae with keys to the New World species (Acarina). [101] 60: 195–204, ill., 1952. **Hoff, C. C.**—Two new species of pseudoscorpions from Illinois. [71] 45: 188–95, ill. **Holm, A.**—Araneida. (See Anatomy.) **Keifer, H. H.**—The eriophyid mites of California (Acarina: Eriophyidae). [41] 2: 1–123, ill., 1952 (k). **Krishnan, G.**—On the cuticle of the scorpion Palamneus swammerdami. [116] 94: 11–22, ill. **Manglitz, G. R. and E. N. Cory.**—Biology and control of Brevipalpus australis (Acarina: Pseudoleptidae). [76] 46: 116–19. **Mitchell, R. D.**—A new species of Lundbladia and remarks on the family Hydryphantidae (water mites). [12] 49: 159–70, ill. **Postner, M.**—Das Männchen von Parasitus americanus Berlese 1906 (Parasitidae, Acarina). [159] 150: 25–30, ill. **Schubart, O.**—Diplopoda de Pirassununga IV. Adenda à fauna regional. [48] 3: 403–20, ill., 1952. **Vachon, M.**—The biology of scorpions. [Endeavor] 12: 80–89, illus. **Wharton, G. W. and H. S. Fuller.**—A manual of the chiggers. The biology, classification, distribution, and importance to man of the larvae of the family Trombiculidae (Acarina). [Memoir, Ent. Soc. Washington] no. 4, 185 pp., illus., 1952.

SMALLER ORDERS—Barlet, J.—Ressemblances entre le thorax de Nicoletis (Thysanoure Lépismatidae) et celui d'autres apterygotes. [Bull. Inst. Roy. Sci. Nat. Belg.] 28, no. 54, 8 pp., ill., 1952. **Bianchi, F. A.**—Thysanoptera of Samoa. [69] 15: 93–108, ill. **Buchholz, K. F.**—Eine neue Antidythemis-art (Libellulinae, Odonata) mit Bemerkungen ueber das Genus Antidythemis Kirby und A. tramaeiformis Kirby. [Bull. Inst. Roy. Sci. Nat. Belg.] 28, no. 35, 11 pp., ill., 1952 (P). **Day, W. C.**—A new mayfly genus from California. [111] 29: 19–24, ill. **Demoulin, G.**—Les Behningia Lestage 1929, et leur position dans la classification des éphémères. [Bull. Inst. Roy. Sci. Nat. Belg.] 28, no. 21, 15 pp., illus., 1952. Contribution à l'étude des Ephoronidae Euthyplociinae (Ephéméroptères). [Bull. Inst. Roy. Sci. Nat. Belg.] 28, no. 45, 22 pp., ill., 1952. Essai de nouvelle clé pour la détermination des Oligoneuriidae (Ephéméroptères). [Bull. Inst. Roy. Sci. Nat. Belg.] 28, no. 43, 4 pp., 1952. Sur les affinités siphlonuridiennes du genre Metreletus Demoulin, 1938 (Éphéméroptères). [Bull. Inst. Roy. Sci. Nat. Belg.] 28, no. 31, 11 pp., ill., 1952. **Friauf, J. J.**—Dermaptera. (See Anatomy.) **Henson, H.**—On the external morphology of the neck and thorax of

Forficula auricularia L. (Dermaptera). [126] 104: 25–37, ill. **Kimmins, D. E.**—New Hawaiian Coniopterygidae (Neuroptera). [69] 15: 37–39, ill. **Lieftinck, M. A.**—The larval characters of the Protoneuridae (Odon.), with special reference to the genus Selysioneura Förster, and with notes on other Indo-Australian genera. [Treubia] 21: 641–84, ill. **Lüscher, M.**—The termite and the cell. [Scient. Amer.] 188, no. 5: 74–78, ill. **Ross, H. H. and E. W. King.**—A key to the world genera of the caddisfly tribe "Hydrobiosini" (Rhyacophilidae). [8] 12: 501–08, ill., 1951 (*k). **Tohm, G. L.**—Some Siphonaptera from Pima County, Arizona. [111] 29: 42. **Wehrle, L. P.**—A host index of some Arizona fleas (Siphonaptera). [111] 29: 37–41. **Wray, D. L.**—A new Prospinanura (Collembola) from North Carolina. [36] 48: 40–41. Two new North American Isotoma (Collembola) and key to eyeless forms. [36] 48: 54–56. **Wygodzinsky, P.**—Apuntes sobre "Thysanura" americanas. [8] 11: 435–58, ill., 1951 (*k).

ORTHOPTERA—Chopard, L.—Notes sur les orthoptéroïdes de Madagascar. IV. Faune de la forêt de mousses du Tsaratanana. [72] 1: 463–516, ill., 1952. **Dresden, D. and E. D. Nijenhuis.**—On the anatomy and mechanism of motion of the mesothoracic leg of Periplaneta americana. [Proc. Neder. Akad. Wetens. Ser. C] 56: 39–47, ill. **Ergene, S.**—Homochromer Farbwechsel ohne Häutung bei Heuschrecken auf schwarzem Untergrund. [158] 81: 604–09, ill. **Fortescue-Foulkes, J.**—Seasonal breeding and migrations of the desert locust (Schistocerca gregaria Forskal) in southwestern Asia. [Antilocust Memoir] 5, 36 pp., ill. **Friauf, J. J.**—An ecological study of the Dermaptera and Orthoptera of the Welaka area in northern Florida. [49] 23: 79–126, ill. **Hutchins, R. E. and J. M. Langston.**—An unusual occurrence of the field cricket. [76] 46: 169. **Key, K. H. L.**—A provisional check-list of the Acridoidea of Tasmania. [Papers & Proc. Royal Soc. Tasmania] 86: 127–30, 1952. **Lhoste, J.**—(See Anatomy.) **Petersen and Weber.**—(See Anatomy.) **Pirán, A. A.**—El alotipa macro de Parudenus falklandicus Enderlein, 1909 (Rhaphidophoridae). [8] 10: 283–84, 1952. **Rehn, J. A. G.**—On two interesting phasmids from coastal Peru. [9] 79: 1–11, ill. **Tuzet, O. and M. Zuber-Vogeli.**—La spermatogenèse de Zonocerus variegatus L. (Acridoidea, Pyrgomorphidae). [Bull. Inst. Franc. d'Afrique noire] 15: 487–94, ill.

HEMIPTERA—Adachi, M. S. and D. T. Fullaway.—Two new diaspidid scales on Acaucaria. [69] 15: 87–91, ill.

Barber, H. G.—The genus Pachybrachus in the United States and Canada with the description of two new species (Lygaeidae). [101] 60: 211–20, 1952 (k). A new subfamily, genus, and species belonging to the family Enicocephalidae. [13] 1614, 4 pp. **Bray, D. F.**—Life history and control of Cinara winonkae (Aphididae). [76] 46: 103–07. **Cachan, P.**—Les Pentatomidae de Madagascar. [72] 1: 231–462, ill., 1952. **Chuchuy, M. E.**—Un insecto perjudicial del malvón Sibovia sagata (Sign.) (Jassidae). [8] 10: 99–104, ill., 1952. **Drake, C. J.**—American species of Ranatra annulipes Stål group. [152] 43: 109–17, ill. (*). The genus Parada Horvath (Tingidae). [115] 59: 143–47, 1952. **Dumbleton, L. J.**—A note on Aleuroplatus (Ochramus) samoanus Laing (Aleyrodidae). [69] 15: 21–23, ill. **Essig, E. O.**—Aphid miscellany. [111] 29: 1–13. The orchard grass aphid, Hyalopteroides humilis (Walker). [111] 29: 17–18. **Frost, S. W.**—Miridae from light traps. [101] 60: 237–40, 1952. **Hottes, F. C.**—Seasonal variations in Myzocallis californicus Baker (Aphididae). [111] 29: 43–46, ill. **Hussey, R. F.**—Concerning some North American Coreidae. [36] 48: 29–34 (k). **Lallemand, V. and H. Synave.**—Contribution à l'étude des homoptères. II. Détermination d'homoptères de l'Institut royal des sciences naturelles de Belgique. [Bull. Inst. Roy. Sci. Nat. Belg.] 28, no. 29, 1952 (S). **Leston, D.**—A note on oligomery in Lygaeidae. [Ent. Gazette] 4: 133–34, ill. **Martin, B. A.**—Temporary elimination of the autosomes from the meiotis spindle in a halyinid pentatomid. [79] 92: 207–40, ill. **Ross, H. T.**—Another European cherry leafhopper in North America. [76] 46: 177, ill. **Wigglesworth, V. B.**—The origin of sensory neurones in an insect Rhodnius prolixus. [116] 94: 93–112, ill. **Wygodzinsky, P.**—Sobre algunos Cryptostemmatidae, principalmente de la Argentina. [8] 10: 51–74, ill., 1952.

LEPIDOPTERA—Avinoff, A. and W. R. Sweadner.—The Karanasa butterflies, a study in evolution. (Annals Carnegie Museum, v. 32, art. 1, 250 pp., 17 pls., 1951.) (Review by E. G. Munroe [85] 7: 16–23.) **Beebe, R.**—Sampling Michigan Lepidoptera by the fixed light trap. [85] 7: 28. **Bourquin, F.**—Cuatro notas sobre metamorfosis de microlepitopteros (Aristotelia perplexa, Parastega hemisigna, Porphyrosela sp., Darlia praetexta). [8] 12: 509–18, ill., 1951. Metamorfosis de "Amastus prosenii" Köhler 1949 (Arctiidae). [8] 12: 527–32, ill., 1951. Metamorfosis de "Megalopyge lanceolata" Dogn. 1923 (Megalopygidae). [8] 12: 533–38, ill., 1951. Notas sobre la metamorfosis de "Antispastis clarkei" Pastrana 1951 (Glyphipterygidae). [8] 12: 523–26, ill., 1951. **Bradley, J. D.**—New microlepidoptera from Fiji. [69] 15: 109–14, ill. **Chadbourne and Rainwater.**—(See Anatomy.) **Christensen, P. J. H.**—The embryonic development of Cochlidion limacodes Hufn. (Fam. Cochlididae); a study on living dated eggs. [Biol. skr. Danske Vidensk. Selskab] 6: no. 9, 46 pp., ill. **Clarke, J. F. G.**—The moths of the genus "Coptotelia" Zeller (Oecophoridae). [8] 11: 335–52, ill., 1951 (*). **Diakonoff, A.**—Microlepidoptera of New Guinea; results of the Third Archbold Expedition, 1938–39. [Verh. K. Neder. Akad. Weten. Afd. Naturk.] 2d ser. 49: no. 1, 167 pp., ill., 1952. **Eassa, Y. E. E.**—(See Anatomy.) **Fender, K. M. and J. H. Baker.**—Notes on the migration of Nymphalis californica. [85] 7: 15. **Fraisse, R.**—La croissance de la tête chez la larve du Bombyx mori L. en fonction du régime alimentaire. [2] 236: 1613–14. **Franz, E.**—Sphingidae aus El Salvador. [Senckenbergiana] 33: 253–55, 1952. **Fulton, M.**—Migration of the monarch butterfly through Chicago. [85] 7: 28. **Gray, P. H. H.**—A note on the colors of pupae of Pieris rapae developed under artificial conditions. [85] 7: 5–6. **Hayward, K. J.**—Clave para los géneros y especies argentinos de la familia Nymphalidae. [8] 10: 401–21, 1952. Una clave para les subfamilias, géneros y especies argentinos de la familia Heliconiidae. [8] 10: 311–13, 1952. Guia para le clasification de las especies y formas argentinas de la familia "Papilionidae." [8] 12: 279–330, ill., 1951. Más notas sobre ninfálidos Argentinos (Nymphalidae). [8] 10: 285–90, 1952. **Kiriakoff, S. G.**—De gehoororganen en de systematick der Lepidoptera. [57] 14: 246–50, ill. **Knowlton, G. F.**—Observations of Celerio lineata, the white-lined sphinx, in Utah. [85] 7: 11–12. **Knudsen, J. P.**—(See General.) **Köhler, P.**—Las Noctuidae argentinas, subfamilia "Cucullianae." [8] 12: 135–82, 1951. **Komai, T.**—Composition of wild populations in the lycaenid butterfly Neozephyrus taxila. [15] 87: 87–95, ill. **Kusnezov, N.**—Atticonviva Busck en la Argentina (Tineidae). [8] 10: 281–82, 1952. **Makino and Saito.**—(See Anatomy.) **Mather, B.**—A migration of Ascia monuste in Mississippi. [85] 7: 13–14. **Pastrana, J. A.**—Una especie nueva de "Glyphipterygidae" de la Argentina. [8] 12: 519–22, ill., 1951. **Phinhey, E. C. G.**—Butterflies of Rhodesia. Salisbury, Rhodesia Scientific Association, 1949. 208 pp., illus., pls. (Review by R. W. Macy [85]

7: 25.) **Rawson, G. W. and P. F. Bellinger.**—Sparrows feeding on congregating Papilio. [85] 7: 27. **Remington, C. L.**—The biology of nearctic Lepidoptera. II. Foodplant and pupa of Hemiargus isolus (Lycaenidae). [115] 59: 129–30, 1952. **Swezey, O. H.**—A new species of leafminer in Straussia (Gelechiidae). [69] 15: 23. **Tanada, Y.**—Description and characteristics of a granulosis virus of the imported cabbageworm. [69] 15: 235–60, ill. A microsporidian parasite of the imported cabbageworm in Hawaii. [69] 15: 167–75, ill. Susceptibility of the imported cabbageworm to Bacillus thuringiensis Berliner. [69] 15: 159–66. **Temple, V.**—Some notes on the courtship of butterflies in Britain. [Ent. Gazette] 4: 141–61, ill. **Van der Kloot, W. G. and C. M. Williams.**—Cocoon construction by the Cecropia silkworm. I. The role of the external environment. [Behaviour, Leiden] 5: 141–56, ill. **Whittaker, R. H.**—Notes on a migration of Nymphalis californica. [85] 7: 9–10.

DIPTERA—Aczél, M. L.—Catalogo de la subfamilia americana "Pterocallinae" (Otitidae). [8] 11: 397–433, 1951. Further revision of the genus Xanthaciura Hendel (Trypetidae). [8] 10: 245–80, ill., 1952 (*k). Generos y species neotropicales de la tribus "Trypetini." II. Dos generos y una especie nuevos. [8] 12: 253–78, ill., 1951. Morfologia externa y division sistematica de las "Tanypezidiformes" con sinopsis de las especies argentinas de "Tylidae" (Micropezidae) y "Neriidae." [8] 11: 483–589, ill., 1951. Revisión parcial del género americano Paracantha Coquillett (Trypetidae). [8] 10: 199–44, ill., 1952 (*). Suplemento al "catalogo de la familia Trypetidae de la region neotropical." [8] 12: 117–33, 1951. **Adachi, M. S.**—Preliminary studies in Hawaiian Dolichopodidae. Part I. New species of Campsicnemus Haliday. [69] 15: 117–22, ill. **Aguilar, J. d', J.-M. Legay and C. Vago.**—Parasitisme de Ctenophoracera pavida Meig. sur Bombyx mori L. (Larvaevoridae). [138] 58: 23–25. **Alexander, C. P.**—New or little-known Tipuloidea from Argentina. Pt. 1. [8] 10: 75–94, ill., 1952. Notes on the Tipulidae of Ecuador. [Revista Ecuatoriana de Ent. y Parasit.] 1: 5–13. Records and descriptions of neotropical crane-flies (Tipulidae), XXVI. [101] 60: 245–54, 1952. Undescribed species of nematocerous Diptera. Pt. II. [36] 48: 41–49. **Bess, H. A.**—Status of Ceratitis capitata in Hawaii following the introduction of Dacus dorsalis and its parasites. [69] 15: 221–34. **Bezem, J. J. and F. H. Sobels.**—Penetrance and expressibility in the genotype abnormal abdomen of Drosophila melanogaster. [Proc. Neder. Akad. Wetens. Ser. C] 56: 48–61. **Blanton, F. S.**—The results of several years collecting parasitic flies (Tachinidae). [101] 60: 225–35, 1952. **Boyes, J. W. and A. Wilkes.**—Somatic chromosomes of higher Diptera. I. Differentiation of tachinid parasites. [44] 31: 125–65, ill. **Brundin, L.**—Zur Kenntnis der Taxonomie und Metamorphose der Chironomidengattungen Protanypus Kieff., Prodiamesa Kieff. und Monodiamesa Kieff. [Rept. Institute of Freshwater Research, Drottningholm] 33: 39–53, ill., 1952. **Burton, G. J.**—Some techniques for mounting mosquito eggs, larvae, pupae and adults on slides. [92] 13: 7–15. **Dietz, R. A.**—Field notes on Neorhynchocephalus sackenni (Williston) in Missouri (Nemestrinidae). [36] 48: 38–39. **Dodd, A. P.**—Observations on the stem gall fly (Procecidochares utilus Stone) of Pamakani, Eupatorium glandulosum. [69] 15: 41–44. **Dodge, H. R.**—Two sarcophagid flies new to Hawaii. [69] 15: 131–34, ill. **Dupuis, C.**—Contributions à l'étude des Phasiinae cimicophages (Larvaevoridae). XV. Données sur les Leucostomatina et, en particulier, Leucostoma analis (Meigen) s. str. [17] 28: 64–97, ill. **Fairchild, G. B.**—A note on Hertigia hertigi Fairchild and description of the female (Psychodidae). [56] 55: 101–02, ill. **Farr, T. H.**—A note on the swarming habits of Ogcodes dispar (Macq.) (Cyrtidae). [36] 48: 39–40. **Fleschner, C. A. and D. W. Ricker.**—An empidid fly predaceous on citrus red mites. [76] 46: 155. **Fluke, C. L.**—The genus "Dolichogyna" (Syrphidae). [8] 12: 465–78, ill., 1951 (*). **Foote, R. H.**—The pupal morphology and chaetotaxy of the Culex subgenera Melanoconion and Mochlostryax. [56] 55: 89–100. **Frick, K. E.**—Further studies on Hawaiian Agromyzidae, with descriptions of four new species. [69] 15: 207–15 (k). **Frohne, W. C.**—Another snipe fly pest in Alaska. [92] 13: 25. A factor influencing male mosquito and midge swarms. [92] 13: 27. **Gilbert, Couch and McDuffie.**—(See Anatomy.) **Hardy, D. E.**—The Argentine "Biblionidae." [8] 12: 343–76, ill., 1951 (*k). New Hawaiian Tipulidae. [69] 15: 55–58, ill. Notes on the Shannon types of Dorilaidae from Argentina (Pipunculidae). [8] 10: 299–306, ill., 1952. Studies in Hawaiian Dorilaidae. Pt. I. [69] 15: 59–73, ill. **Hardy, G. H.**—The evolution of antennae in the Diptera. [60] 89: 79–80. **Hemmingsen, A. M.**—The oviposition of some crane-fly species (Tipulidae) from different types of localities. [Videnskab. Medd., Dansk Naturhist. Foren.]

114: 365–430, ill., 1952. **Hsu, W. S.**—The origin of proteid yolk in Drosophila melanogaster. [116] 94: 23–28, ill. **James, M. T.**—The Stratiomyidae of Bimini, British West Indies. [13] 1613, 6 pp. (*). **Janssens, E.**—Méthodes de chasse de Neoitamus cyanurus (Asilidae). [136] 88: 289–90, ill., 1952. Revision du genre Lasiocnemus Loew (Asilidae). [Bull. Inst. Roy. Sci. Nat. Belg.] 28, no. 24, ill., 1952. **Khalaf, K. T.**—Culicoides spinosus in Oklahoma (Heleidae). [111] 29: 46–47. **Lane, J.**—Neotropical Mycetophila. [48] 3: 421–34, ill., 1952 (*k). **Leclercq, M.**—Introduction à l'étude des tabanides et revision des espèces de Belgique. Pt. I, Biologie et importance parasitologique des tabanides dans le monde. [Mém. Institut Roy. Sci. Nat. de Belg.] 123, 80 pp., ill., 1952. **Leví-Castillo, R.**—Dos especies nuevas de mosquitos ecuatorianos (Culicidae). [Revista Ecuatoriana de Ent. y Parasit.] 1: 14–17, ill. Lista provisional y distribución de los mosquitos Culicinos en el Ecuador. [Revista Ecuatoriana Ent. y Parasit.] 1: 34–45. A note on the systematic status of the genus Haemagogus, Williston 1896 (Culicidae). [Revista Ecuatoriana de Ent. y Parasit.] 1: 19–25. **Lindner, E.**—Die Fliegen der palaearktischen Region, Lief. 170 (15. Tipulidae, pp. 65–112, ill., 1952), Lief. 171 (33. Phoridae, pp. 273–320, ill., 1952), Lief. 172 (64g. Larvaevorinae (Tachininae), pp. 257–304, ill., 1953). **Maeda, S., K. S. Hagen and G. L. Finney.**—Artificial media and the control of microorganisms in the culture of tephritid larvae (Tephritidae). [69] 15: 177–85. **Martin, C. H.**—Intraspecific variation of taxonomic characters in Coleomyia and two new species (Asilidae). [111] 29: 25–34 (k). **Nater, H.**—Vergleichend-morphologische Untersuchung des äusseren Geschlechtsapparates innerhalb der Gattung Drosophila. [158] 81: 437–86, ill. **Possompès, B.**—(See Anatomy.) **Pritchard, A. E.**—The gall midges of California, Itonididae (Cecidomyiidae). [41] 2: 125–50, ill. (k). **Reinhard, H. J.**—New muscoid Diptera from the western United States. [111] 29: 49–59. **Ryckman, R. E.**—Diptera reared from barn owl nests. [111] 29: 60. **and C. T. Ames.**—Adoxomyia claripennis collected from wood rat nests in Arizona (Stratiomyidae). [111] 29: 60. **Sabrosky, C. W.**—A new North American species of Metopia (Sarcophagidae). [36] 48: 50–53 (k). **Schuurmans Stekhoven, J. H., Jr.**—Algunas especies del genero "Basilia" Ribeiro y creacion del nuevo genero "Guimaraesia" (Nycteribiidae). [8] 12: 101–15, ill., 1951. Nuevos hechos relacionados con "Guimaresia romanai" (Del Ponte) (Nycteribiidae). [8] 12: 551–61, ill., 1951. Un representante raro del grupo de los dípteros pupíparos. Una especie del género Ascodipteron, parásito de Miniopterus schreibersi Kuhl. [8] 10: 479–87, ill., 1952. **Shaw, F. R.**—A review of some of the more important contributions to our knowledge of the systematic relationships of the Sciaridae. [69] 15: 25–32, ill. **Summers, T. E. and E. W. Stafford.**—Diabrotica undecimpunctata howardi parasitized by Celatoria diabroticae (Tachinidae). [76] 46: 180. **Thompson, G. A.**—Observations of early spring activity of Culiseta inornata (Williston) (Culicidae) in south central Nebraska. [92] 13: 17. **Townsend, J. I.**—To obtain Drosophila willistoni from the Greater Antilles in order to compare the chrosomal polymorphism with that reported from other neotropical areas. (Report on Grant.) [Yearbook, Amer. Phil. Soc.] 1952: 167–68. **Van den Bosch and Haramoto.**—(See Hymenoptera). **Vergani, A. R.**—La mosca del Mediterraneo, Ceratitis capitata (Wied.). [Argentina Min. Agr. Ganad. Serie B] 8: no. 22, 17 pp., ill., 1952. **Wallis, R. C.**—A technique for micromanipulation of mosquitoes. [92] 13: 15–16, ill.

COLEOPTERA—Arnett, R. H.—Beetles of the oedemerid genus Vasaces Champion. [151] 103: 87–94, ill. (*). **Ayyappa and Cheema.**—(See Hymenoptera.) **Bechyné, J.**—Deuxième note sur les eumolpides néotropicaux des collections de l'Institut royal des sciences naturelles de Belgique. [Bull. Inst. Roy. Sci. Nat. Belg.] 28, no. 38, 20 pp., ill., 1952. **Blake, D. H.**—Two new species of Glyptoscelis (Chrysomelidae) from Argentina. [8] 10: 163–66, ill., 1952. **Bosq, J. M.**—Descripción de una nueva especie del género Centrocerum Chevr., 1861 (Cerambycidae). [8] 10: 95–97, 1952. **Darlington, P. J., Jr.**—A new Bembidion (Carabidae) of zoogeographic interest from the southwest Pacific. [47] 7: 12–16. **Duffy, E. A. J.**—The immature stages of Hawaiian Cerambycidae, with a key to larvae. [69] 15: 135–58, ill. **Emden, F. I. van.**—The larva of Morion and its systematic position (Carabidae). [69] 15: 51–54, ill. **Fisher, W. S.**—New cerambycid beetles belonging to the tribe Rhinotragini. [111] 29: 14–17. **Gardiner, P.**—The morphology and biology of Ernobius mollis L. (Anobiidae). [126] 104: 1–24, ill. **Gilbert, E. E.**—Sexual dimorphism and synonymy in Anthonomus (Anthonomorphus) (Curculionidae). [111] 29: 41. **Given, B. B.**—(See General.) **Gressitt, J. L.**—The genus Glaucytes in the Pacific (Cerambycidae). [69] 15: 195–99, ill. (k). Longicorn beetles of China. [Longicornia, ed. by P. Lepesme] 2, 667 pp., ill., 1951.

Guérin, J.—Description de quatre nouvelles espèces de Megalopodidae de la "Zoologische sammlung des Bayerischen Staates," München. [48] 3: 435–42, ill., 1952 (*S). **Helfer, J. R.**—Two new Hippomelas (Buprestidae). [111] 29: 34–36. **Janssens, E.**—(See General.) **Jolivet, P.**—Notes biométriques sur quelques Chrysomeloidea. [Bull. Inst. Roy. Sci. Nat. Belg.] 28, no. 44, 8 pp., 1952. **Kennington, G. S.**—(See Anatomy.) **Knowlton, G. F.**—Dynastes Granti Horn in Utah (Scarabaeidae). [36] 48: 49. **Lane, M. C.**—Some generic corrections in the Elateridae, IV. [56] 55: 86–89. **McDermott, F. A.**—Further data regarding Jamaican Lampyridae, in extension of the work of Dr. John B. Buck. [Yearbook, Amer. Phil. Soc.] 1952: 165–67. **Monrós, F.**—Notas sobre Criocerinae (Chrysomelidae). [8] 11: 467–82, ill., 1951 (*). Revisión de las especies argentinas de Chlamisinae (Chrysomelidae). [8] 10: 489–672, ill., 1952 (*k). Seis nuevas especies de Criocerine del noroeste Argentino (Chrysomelidae). [8] 10: 33–49, ill., 1952. **and M. J. Viana.**—Las Cassidinae de la seccion "Hemisphaerotina" con revision de las especies argentinas. [8] 11: 367–95, ill., 1951 (*k). **Papp, C. S.**—Neubeschreibungen über einige chrysomeliden aus Südamerika. [8] 10: 291–98, ill., 1952 (k). **Park, O.**—A new genus of pselaphid beetles from the Everglades. [97] 121, 4 pp., ill. **Schedl, K. E.**—Fauna Argentinensis V. Contribution to the morphology and taxonomy of the Scolytoidea. [8] 12: 443–63, 1951 (*). Scolytoidea nouveaux du Congo Belge. [Annal. Musée Roy. Congo Belge, Série in 8°, Sci. Zool.] 13, 62 pp., ill., 1952. **Selander, R. B.**—A new species of Calospasta from Utah (Meloidae). [111] 29: 47–48. **Summers and Stafford.**—(See Diptera.) **Théodoridès, J.**—Les coléoptères fossiles. [137] 121: 23–48, ill., 1952. **Tilden, J. W.**—Observations on the biology of Psoa maculata Leconte (Psoidae). [47] 7: 9–12. **Uhmann, Erich.**—"Hispinae" von Brasilien und Argentinien (Chrysomelidae). [8] 12: 331–41, ill., 1951 (*). **Van den Bosch, R.**—(See Hymenoptera.) **Vaurie, P.**—The Gregorio Bondar types of South American weevils (Curculionidae). [13] 1615, 39 pp.

HYMENOPTERA—Ayyappa, P. K. and P. S. Cheema.—An ectoparasite (Bethylidae) on the larvae of Anthrenus vorax Waterhouse. [Proc. Indian Acad. Sci. Sect. B] 36: 215–22, ill., 1952. **Bohart, G. E. and G. F. Knowlton.**—Notes on mating, prey provisioning and nesting of Sphex procerus (Dahlbom), Sphecidae. [56] 55: 100–01. **Cole, A. C., Jr.**—To collect and make taxonomic and ecologic studies of the ants of New Mexico. (Report on Grant.) [Yearbook, Amer. Phil. Soc.] 1952: 153. **Creighton, W. S.**—New data on the habits of the ants of the genus Veromessor (Formicidae). [13] 1612, 18 pp. Pseudomyrmex apache, a new species from the southwestern United States (Formicidae). [115] 59: 131–42, ill., 1952. Studies on Arizona ants (4) Camponotus (Colobopsis) papago, a new species from southern Arizona. [115] 59: 148–62, ill., 1952. **Fullaway, D. T.**—Three new species of Eurytoma. [69] 15: 33–36. **Gaul, A. T.**—Additions to vespine biology. XI, Defense flight. [36] 48: 35–37. **Hagen, K. S.**—A premating period in certain species of the genus Opius (Braconidae). [69] 15: 115–16. **Hutchins, R. E.**—The amazing fungus ants. [Nature Magazine] 46: 245–46, ill. **Jackson, W. B.**—Microclimatic factors in army ant behavior and ecology. [Amer. Phil. Soc. Yearbook] 1952: 157–61. **Krombein, K. V.**—A note on the nesting habits of Megachile texana Cresson. [56] 55: 84–85. **Kusnezov, N.**—Acerca de las hormigas simbióticas del género Martia Forel (Formicidae). [8] 10: 717–22, 1952 (*). Die ameisenfauna Argentiniens (Formicidae). [159] 150: 15–25. Un caso de ergatandromorfismo en Lasiophanes nigriventris Spin. (Formicidae). [8] 10: 153–62, ill., 1952. "Descolemyrma ogloblini" genero y especie nuevos de la tribu "Attini" (Formicidae). [8] 11: 459–65, ill., 1951. El estado real del grupo Dorymyrmex Mayr (Formicidae). [8] 10: 427–47, ill., 1952. El genero "Camponotus" en la Argentina (Formicidae). [8] 12: 183–252, ill., 1951. El género Oligomyrmex Mayr en la Argentina (Formicidae). [8] 10: 183–87, ill., 1952. El genero "Pheidole" en la Argentina (Formicidae). [8] 12: 5–88, 1951 (k). El genero "Pogonomyrmex" Mayr (Formicidae). [8] 11: 227–333, ill., 1951 (*k). El género Wasmannia en la Argentina (Formicidae). [8] 10: 173–82, ill., 1952 (*). "Lasiophanes" Emery en la Patagonia (Formicidae). [8] 12: 89–100, 1951. "Myrmelachista" en la Patagonia (Formicidae). [8] 11: 353–65, ill., 1951 (*). **and R. Golbach.**—Lista de las especies argentinas de la tribus Dacetini, Formicidae. [8] 10: 423–26, 1952. **Laidlaw, Harry H.**—An anesthetization chamber for the artificial insemination of queen bees. [76] 46: 167–68, ill. **Lees, A. D.**—(See Anatomy.) **Maa, T.**—An inquiry into the systematics of the tribus Apidini or honeybees. [Treubia] 21: 525–40, ill. **Pielou and Glasser.**—(See Anatomy.) **Riegel, G. T.**—Neotropical exodont Braconidae. [71] 45: 177–81. **Risbec, J.**—Contribution à l'étude des chalcidoïdes de Madagascar.

[72] 2: 1–449, ill., 1952. **Smith, M. R.**—A revision of the genus Romblonella W. M. Wheeler (Formicidae). [69] 15: 75–80, ill. **Van den Bosch, R.**—Bathyplectes curculionis (Ichneumonidae) as a parasite of Hypera brunneipennis (Curculionidae). [76] 46: 161–62. **and F. H. Haramoto.**—Competition among parasites of the oriental fruit fly. [69] 15: 201–06. **Van Pelt, A.**—Notes on the above-ground activity and a mating flight of Pogonomyrmex badius (Latr.). [147] 28: 164–68. **Wheeler, G. C. and J. Wheeler.**—The ant larvae of the myrmicine tribe Pheidolini. [56] 55: 49–84, ill. **Willink, A.**—Las especies argentinas y chilenas de "Chlorionini" (Sphecidae). [8] 11: 53–225, ill., 1951 (*k). Sphecidos neotropicales. I. [8] 10: 167–71, 1952. Los véspidos sociales argentinos, con exclusión del género Mischocyttarus (Vespidae). [8] 10: 105–51, ill., 1952 (k). **Zikan, J. F.**—Polymorphismus und Ethologie der sozialen Faltenwespen (Vespidae Diploptera). [8] 11: 5–51, ill., 1951.

Reviews

APHIDS OF THE ROCKY MOUNTAIN REGION. By Miriam A. Palmer. Vol. V. Thomas Say Foundation. For sale by Professor J. J. Davis, Department of Entomology, Purdue University, Lafayette, Indiana. Price: $10.25 post paid in U. S. A., $10.50 elsewhere.

Entomologists will be pleased to learn of the publication of volume five, by the Thomas Say Foundation. This volume of four hundred fifty-two pages is by Miriam A. Palmer, who was for many years associated with C. P. Gillette, and is titled "Aphids of the Rocky Mountain Region." This work, the largest thus far published on aphids in America, brings together descriptions, illustrations, and biological notes on about 460 aphid species known to occur in Colorado, Utah, southern Wyoming, southeastern Idaho, and northern New Mexico. Many of the species are keyed for the first time, and many have never been figured before. The work is especially noteworthy because it brings together the many species described from Utah by G. F. Knowlton. Several new species are described and one or two new names are proposed. The plan of classification followed is largely that of A. C. Baker, and is conservative as to genera and species. Following a brief introduction, the family is characterized and divided into subfamilies. The subfamilies are characterized, keyed to tribes and subtribes, these are in turn characterized and keyed. Genera are characterized, and keyed to species. Individual species are treated after a rather fixed pattern: all known forms are described and essential characteristics illustrated by excellent line drawings which are grouped to make four hundred fifty-four figures, distribution is indicated within the area, and essentials of life history recorded. The section on taxonomy of species is followed by eight colored plates. Following the colored plates there comes a section which should appeal to many entomologists; it is a key to species infesting economic plants grouped under their respective hosts. These keys are brief because they involve few species and for the most part employ common, well known, easily recognized characters. Here one finds keys to such species that live on apple, aster, birch, blue spruce, currants, plum, rose and many other garden and field crops. There is a host plant index, list of literature, gazetteer, and an index to scientific names.

Probably in deference to American economic entomologists a few well known, well established names for species are retained which are known to be synonyms. In one or two cases perhaps this is well because taxonomists in Europe do not agree as to which specific name should be used. It might, however, have been well to indicate such cases. In a work as extensive as this, it is natural that taxonomists would find points here and there to quibble over, or on which they hold honest differences of opinion concerning generic concepts, the interpretation of rules of nomenclature, and the use of specific names. These differences of opinion will vary from person to person, and need not concern the general user of this book.

The work is not a revision. It is to be regretted that it does not cover the entire United States, or that it does not include the species described from the Pacific Coast unless they occur within the region. However, it is by no means as limited in its scope as its title indicates. It includes most economic species found in the United States. The addition of approximately a hundred species from the United States and Canada would make it practically complete.

The book is excellently printed by the off-set process and well and strongly bound.

For this reviewer, who more than thirty years ago received instruction and infectious enthusiasm for the study of aphids from Professor Palmer, it is a pleasure to recommend this book.

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PLANT DISEASES IN ORCHARD, NURSERY AND GARDEN CROPS. By Ernst Gram and Anna Weber, edited and adapted by R. W. G. Dennis. 618 pp., 350 text figs., 10 colored plates. Philosophical Library Inc., New York, 1953. $18.50.

This elegantly printed volume has had an interesting history and one pertinent to an understanding of its scope. Work on it was begun by the authors in 1933, but the first edition was not published until 1940, in Copenhagen, at a time when Denmark was under blockade and when it was necessary that a country in such a situation be agriculturally self-supporting. The book was so helpful that a second Danish edition was issued in 1944. The present English language edition, based on this second edition, was translated by Evelyn Ramsden and edited and abridged by Dr. Dennis of the Royal Botanic Gardens, Kew.

Intended primarily as a general work for the cultivator, and seemingly popular in parts of Europe, it contains considerable technical information and more than a scattering of scientific terms. Although written in quite lucid English, a professional worker does not feel he is reading a text that has been watered-down for the amateur. Reader interest is often added by a brief history of the development of our knowledge of a disease as well as its early methods of control. Textual references are freely made to authors and a reasonable bibliography is appended.

As one would suppose by the title the contents deals with the diseases of orchard, nursery and garden crops, those of the grain crops being omitted. However, the general scope is wider than the title would seem to indicate. The first section deals with "The nature of plant disease" and includes such things as environmental factors (even damage by lightning), an excellent treatment of mineral deficiencies, poisoning by chemical substances such as coal gas, damage by sprays, as well as a general discussion of various of the aspects of fungus, bacterial and virus disease conditions.

The next three sections, "Diseases of Tree and Bush Fruit," "Diseases of Vegetables and Herbaceous Fruit," and "Diseases of Ornamental Plants and Trees" form the bulk of the text. Here the plants are listed alphabetically under their English common names, with the diseases also listed alphabetically under each, again under their English common names. The name of the causal organism (or initiating condition) is given and the disease discussed, often at considerable length under the subheadings of Symptoms, Cause and Control. Secondary invasions also are considered.

For use in America general effectiveness of the present work will be lessened by several factors. As one would expect, it stresses diseases and conditions prevalent in Denmark. This has been further modified by the last editing which pointed the text toward conditions in England. This does not mean that diseases not present in northwestern Europe but serious elsewhere are not included; however, the lack of emphasis of these is certain to be noted. Yet it is to be admitted that only a few serious plant diseases of temperate regions are today confined to any one area; therefore in general the present text has wide application in America. Perhaps the greatest factor hindering the effectiveness of the book is the presence of varietal names mostly unknown to us, especially in the otherwise excellent tables of susceptibility to diseases and spray injury. In some instances the names of widespread varieties have suffered a "sea change" upon introduction into this country; in the majority of cases, especially among the fruits, we just do not grow the sorts commonly planted in England and Denmark. This same situation holds for the names of the proprietary therapeutic products on occasion noted as being effective in the control of some particular disease; although we may be using the same basic compounds, we do not know them under the same trade names. The four pages on British quarantine regulations and advisory services in the present edition are, of course, only of academic interest to the American reader. Furthermore, the recent expansion of plant disease control measures in America is only touched upon in the text, probably the result of the necessary time lag in production of the present edition. In fact today no book published on this side of the Atlantic can be said to be really up-to-date, so rapid is our production of new therapeutic compounds.

On the whole, however, the entomologist desiring to have at hand a readable treatise on the diseases of a wide range of useful plants will find this work of considerable help. One of the major points of interest will be the "keys" to symptoms under each of the major crop plants. For example, the one on potatoes covers nearly five pages. With an ailing plant at hand one without technical training usually can rather easily run down through the key and determine the cause by the appearance of the specimen, this applying to single element deficiencies (or excesses) and cultural troubles, as well as pathological conditions caused by disease-producing organisms. Fortunately the authors have "keyed-out" the same condition in several places according to its variant symptoms as exhibited under different cultural situations, at different times in the plant's development, as well as in different parts of the plant. These keys also list the page where the condition is discussed at length, either under a particular plant or under some general topic. The illustrations, although not always of the best quality, serve to amplify the discussion and description of symptoms and causal organisms. Altogether, this is a useful and helpful work which should be on the shelves of those economic entomologists who, from time to time, need to ascertain the cause of some pathological condition not directly attributable to insect damage.

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Insect Physiology. Edited by Kenneth D. Roeder. (By R. L. Beard, D. Bodenstein, J. B. Buck, L. E. Chadwick, M. F. Day, V. G. Dethier, G. A. Edwards, D. Gilmour, S. C. Munson, R. L. Patton, A. G. Richards, K. D. Roeder, T. C. Schneirla, W. Trager, and D. F. Waterhouse.) xiv + 1100 pp., 257 figs. John Wiley and Sons, New York, Feb., 1953. Price, $15.00.

This is the first American book on the physiology of insects. True, Snodgrass, in his "Principles of Insect Morphology" (1935), included a good deal of information on the functioning of the various organs that was up-to-date for its time, but the emphasis was morphological. For many years entomologists were concerned mainly with taxonomic, distributional, morphological, life-history, and ecological studies, and with economic entomology. Thus, in spite of the many entomologists in Universities and other institutions, physiology was neglected, and it is only in fairly recent years that we have been hearing more and more of "insect physiologists."

It was the appearance of Wigglesworth's "Principles of Insect Physiology" in 1939 that brought to general notice the fact that a science of insect physiology had surely if quietly been coming into existence, and ever since then that book has accelerated the growth of the science by attracting and guiding new workers in the field. This new book, edited by Roeder, will be valuable in the same way. Compared with Wigglesworth's (1950 edition), the present volume, with 1100 pages, is slightly more than half again as large; Wigglesworth has only 544 pages but has

60% more words per page. The British book provides a better general introduction to the field, with a more complete and uniform coverage of the subject. Roeder contains much detailed information not found in Wigglesworth, especially in the chapters on metabolism, on insect behavior, and in other places.

The authors, each responsible for one or more chapters, are American workers except for the three Australians, M. F. Day, D. Gilmour, and D. F. Waterhouse. The editor acknowledges also the assistance of C. L. Prosser, F. J. Yeager, and C. M. Williams, and names 16 others that helped with individual chapters. Such multiple authorship has its disadvantages as well as advantages. There are some gaps as well as some overlapping in the chapters (and it is important to use the index in order to locate all information on certain subjects), and there are differences in point of view, in the treatment, and in style depending upon the personality of the authors. On the other hand, each subject is presented by a scientist active in the particular field and the information is authoritative and often detailed, especially as regards the most recent developments.

In the text, ideas and facts are credited to the original authors, with the date, so that one may refer to the bibliography at the end of the book; and following each title in the bibliography there are page numbers that refer to the text. This book will be extremely useful to every serious student of entomology, to every teacher, and to the research worker who must have access to information and literature giving the present state of knowledge in the many branches of insect physiology.

R. G. Schmieder

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

American Sarcophagidae—wanted for identification. H. R. Dodge, P.O. Box 185, Chamblee, Georgia.

German lepidopterist wishes to correspond and receive live material (eggs and pupae) in exchange for dried imagoes. Johannes Reichel, Koenigsberg, Krs. Wetzlar 16, Germany.

For exchange—The periodic Cicada, T. septendecim. Desire Lepid., espec. Papil., Sphing. & Speyeria. Also Col., espec. Ceramb. & Lucan. John W. Morris, 2704 Genesee St., Syracuse 9, N. Y.

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Wanted—Reprints or papers concerning insects taken in Alaska for inclusion in list of Alaskan insects. R. H. Washburn, Alaska Experiment Station, Palmer, Alaska.

Conopidae of the World wanted. Will pay 10¢ to $1.00 for pinned and labelled specimens. S. Camras, 4407 N. Milwaukee Ave., Chicago 30, Illinois.

Anisoptera—Nearctic sp. wanted for exchange, espec. Ophiog., Arigom., Aeschna, Neurocor., Somatoc., Cordulia, Dorocor., Leucor. R. D. Cuyler, N. C. State College, Raleigh, N. C.

Bembicini and Stizini (Hym., Sphec.) of New World wanted for revis. study. Will return upon request or at end of project. James E. Gillaspy, Dept. of Zoology, Univ. Texas, Austin 12, Texas.

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OCTOBER 1953

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ENTOMOLOGICAL NEWS

Vol. LXIV OCTOBER, 1953 No. 8

A New Gall Midge Infesting Holly (Diptera: Itonididae)

By Richard H. Foote [1]

The species described here as new is recorded from three eastern states, Maryland, Virginia, and West Verginia, and infests berries of *Ilex opaca* Ait. (American holly) and *Ilex* sp., preventing their ripening.

Asphondylia ilicicola n. sp.

Female: Antenna brown, frons brownish yellow; eyes black. Mesonotum gray pollinose, with a slightly darker narrow median line on anterior two-thirds; posterior third of mesonotum light gray pollinose; each lateral area with a dark gray spot of variable size in the pollinosity just anterior to the wing; a narrow area midway between center line and lateral margin of mesonotum, and a patch antero-laterally, with long, golden hairs. Scutellum and post-scutellum light brown, shiny, with a patch of long golden hairs apico-laterally. Prothorax, propleura and pteropleura light yellowish brown, all other pleural sclerites shining grayish brown becoming darker gray ventrally. Coxae and trochanters grayish brown; front femora light yellowish brown on postero-dorsal surface, becoming slightly darker apically, all remaining surfaces with narrow dark brown scales; mid and hind femora light on posterior surfaces and with slightly darker scales on remainder; tibiae unicolorous or nearly so, somewhat lighter at extreme bases, about as dark as dark portion of femora,

---

[1] Bureau of Entomology and Plant Quarantine, Agricultural Research Administration, U. S. Department of Agriculture, Washington 25, D. C.

OCT 6

clothed with narrow dark scales; tarsal segments with dark scales which appear to be very slightly darker toward the tip of each segment, the fifth tarsal segment golden brown. Wing very light gray, heavily clothed with dark hairs, the basal three-fourths of costa especially so, fringe at posterior angle of wing long. Halter with narrow light scales on stem and apex of knob and darker scales at base of knob. Abdomen light brown, terminalia light brown, both covered with long, golden hairs. Eyes broadly contiguous over head, frons narrow; antenna of 14 segments, the scape roughly triangular, three times as wide at distal end as long; pedicel subglobular, only slightly wider in diameter than the following flagellar segments; last three flagellar segments markedly shortened, the 12th segment 0.4 times as long as basal, 13th 0.25 times as long and the 14th subglobular; circumfilae of second flagellar segment of two loops joined on distal third of segment (fig. 7), circumfilae of 12th and 13th on distal halves of the segments, none present on terminal segment. Three palpal segments, the proportions 1.0 : 4.7 : 6.0, the basal segment sometimes very indistinct, terminal segment bluntly pointed distally (fig. 3). Wing (fig. 4) 2.1 times as long as wide; costa extending slightly beyond tip where it meets R_5, the latter bending down slightly from apical five-sevenths of wing to meet it; M_{3+4} 1.2 times as long as M. Proportions of hind tarsal segments 1.6 : 7.0 : 4.0 : 2.8 : 2.2; tibia slightly longer than femur; length of pulvillus nearly equal to that of claw, the latter single on all three pairs of legs (fig. 10). Ovipositor 0.5 times as long as abdomen; aciculate, very slender, the tip as shown (fig. 2); dorsal pouch blackened, thickly spined and setose, with a median distal invagination, the two lateral halves parallel-sided; membrane of ovipositor with rows of minute, evenly-spaced setae.

Explanation of Figures

Asphondylia ilicicola n. sp. Fig. 1. Female antenna. Fig. 2. Female ovipositor, with posterior tip enlarged. Fig. 3. Female palp. Fig. 4. Wing of male. Fig. 5. Fourth abdominal tergite of pupa. Fig. 6. Pupal "horns." Fig. 7. Second antennal segment of female. Fig. 8. Male terminalia; a, aedeagus; ds, dististyle; bs, basistyle; p, paramere; st, 10th sternite; tg, 10th tergite; ra, root of aedeagus; rbs, root of basistyle. Fig. 9. Pupal respiratory organ. Fig. 10. Apex of fifth tarsal segment of male. Fig. 11. Second antennal segment of male.

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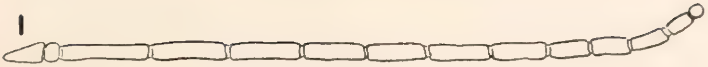

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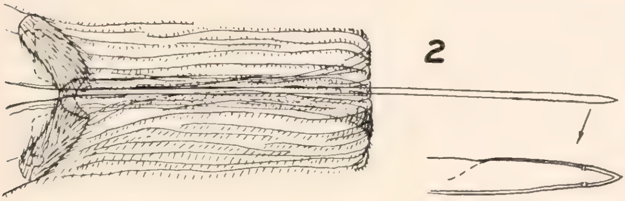

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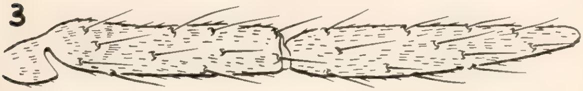

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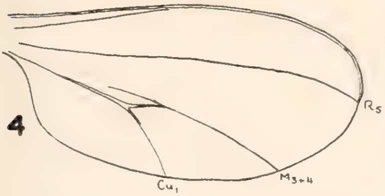

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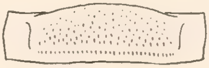

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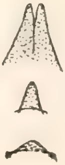

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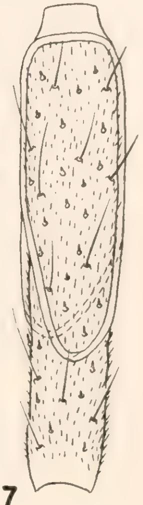

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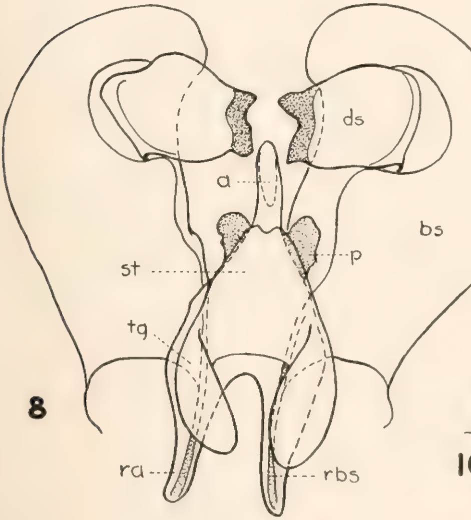

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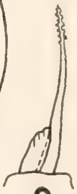

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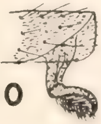

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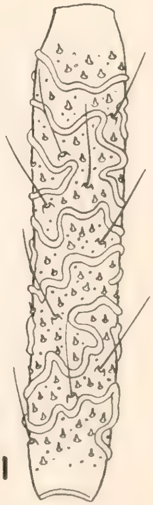

Male: Color similar to female. Terminal flagellar segments not distinctly shortened; circumfila on each segment consisting of a tortuous maze closely adherent to the sides of the segment (fig. 11). Terminal palpal segment tending to be very slightly shorter than that of the female. Proportions of hind tarsal segments 1.5: 10.0: 6.0: 4.0: 2.5. Basistyle short, stout, incomplete on inner side, its root running the full length of root of aedeagus; dististyle extremely short and stout with a bidentate tooth apically, the anterior projection rather blunt, abruptly tapering, the posterior projection slightly flattened on the inner side; tenth sternite broadly triangular with a small distal notch, setae dense and long; tenth tergite with two well-separated setose lobes; aedeagus with two long roots extending well basad of base of basistyle, the side of each root slightly flared laterally, opening at tip of aedeagus 4.0 times as long as wide; parameres darkened, irregular masses attached laterally to either side of aedeagus near terminal opening.

Pupa: Anterior horns touching each other along basal two thirds, and separated only slightly on apical third; second tooth single, blunt; third transverse with only a slight anterior projection (fig. 6). Respiratory organ (fig. 9) consisting of two closely appressed parts, one about one-third the length of the other, the longer with eight to ten slightly raised spiracular openings. Tergites of abdominal segments with a more or less even row of blunt spines near the posterior margin in addition to a patch of irregularly spaced spines which nearly reaches the anterior margin of the tergite, the anterior-most spines in the patch very small and increasing in length posteriorly (fig. 5).

Holotype: Male, Williamsburg, Virginia, Apr. 20, 1949 (J. B. Brouwers), reared from unripened berries of *Ilex* sp., U.S.N.M. Type No. 61640.

Paratypes: 47 females, 7 males, in alcohol and on slides, Williamsburg, Va., Apr. 20, 1949 (J. B. Brouwers), reared from unripened berries of *Ilex* sp., U. S. National Museum Collection.

In addition to the type series, this species is represented in the National Collection by specimens from Mt. Lookout, West Virginia, (no date), and Halethorpe, Maryland (reared March 21, 1952).

Taxonomic discussion: Size and color characters are used by Felt [1] in his key to the species of *Asphondylia.* For this reason it is difficult for one to be certain that he has run specimens correctly in it, since our knowledge of variation in these particular respects is virtually non-existent. In this key, *ilicicola* runs to *johnsoni* Felt, from which it differs by the shape of the 10th sternite and by the differently-shaped palpal segment. *Asphondylia ilicoides* Felt forms an oval bud gall on mountain holly (*Ilex montana* T. & G.) but differs principally in the color of the legs and the shape of the tenth sternite.

An interesting account of an infestation has been furnished by W. C. Legg, Twintiliana Sanctuary, Mt. Lookout, W. Va., who states in a personal communication that the pupal case is left protruding from the hole in the berry and that the berries are usually green throughout the winter and until they drop off in the spring.

A chalcid parasite, *Rileya cecidomyiae* Ashmead, has been reared from *A. ilicicola* on two occasions. These have been identified by A. B. Gahan and B. D. Burks of the Bureau of Entomology and Plant Quarantine, United States Department of Agriculture.

Brief Notes on the Mallophaga. I

By Ronald A. Ward, Department of Zoology, University of Chicago, Chicago 37, Illinois

1. The Identity of *Saemundssonia peristicta* (Kellogg & Kuwana) (Philopteridae)

In the course of a revision of the *Saemundssonia* species occurring on Terns, it has been possible to examine the types of *Saemundssonia peristicta* (Kellogg and Kuwana), through the courtesy of Dr. G. F. Ferris of Stanford University.

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[1] Felt, E. P. 1916. A study of gall midges. IV. N. Y. State Museum Bull. No. 186: 114–150.

As in most of Kellogg's Galapagos Islands material, this species was recorded from a number of hosts, none of which is the true host. *Sterna fuliginosa* (= *S. fuscata crissalis* (Lawrence)) may be eliminated as the type host (listed by Hopkins and Clay, 1952: 334), since this is not the actual species of *Saemundssonia* found on the above host. The species of *Saemundssonia* found on this host is closely related to *S. meridiana* Timmermann and *S. snyderi* (Kellogg and Paine) and will be described in a subsequent paper. *Dendroica aureata* and *Nesomimus carringtoni* may also be eliminated, as *Saemundssonia* species are never found on Passerine hosts. Careful study of the type series shows that *S. peristicta* belongs to the group of *Saemundssonia* found on the Waders.

In the lot of material from Dr. Ferris, there were a male and a female of this species labelled "*Docophorus peristictus* K. & K., from *Rhyacophilus solitarius,* Guadelope Id., Galapagos Is., S.I.K. '99" which were not mentioned in the original description (Kellogg & Kuwana, 1902: 462). There can be no doubt that from the labelling and appearance of the slide, that it was examined by the authors; but for some reason, was not recorded in their paper. However, *Rhyacophilus solitarius* (= *Tringa solitaria* Wilson) cannot be considered as the true host, as Dr. Snodgrass did not collect this host species as shown by an examination of the paper by Snodgrass and Heller (1905) on the birds collected by the Hopkins-Stanford Galapagos Expedition. It might be argued that Snodgrass and Heller actually did collect this host but did not record it in their paper. The fact that Hellmayr and Conover (1948: 121) questioned the validity of the occurrence of *Tringa solitaria* in the Galapagos would tend to deny this contention.

The species of Waders which were actually collected on the Hopkins-Stanford Expedition were as follows: *Squatarola squatarola* (Linné), *Charadrius hiaticula semipalmatus* Bonaparte, *Actitis macularia* (Linné) and *Arenaria interpres morinella* (Linné). The first mentioned species may be eliminated as the host, as *peristicta* bears no resemblance to the *Saemundssonia* found on this host. A comparison of Timmermann's redescription (1951 : 393) of *S. platygaster* (Denny) with *peristicta* shows that almost with certainty, *peristicta* (Kellogg and Kuwana) may be considered as a synonym of *S. platygaster* (Denny) and was probably found on *Charadrius hiaticula.* Timmermann also records it from the above *Arenaria* species which might be the true host. Similarly, a comparison of the females with a single female specimen from *Actitis macularia* shows no differences which seem to be significant. Measurements of the type series (in mm.) of *S. peristicta* (Kellogg and Kuwana) are as follows:

	Length of head	Width of head	Cephalic Index	Length of parameres	Total length
2 males	0.56	0.65–0.68	1.16–1.22	0.27–0.28	1.70–1.73
4 females	0.61–0.63	0.77–0.84	1.25–1.34	———	2.00–2.23

2. THE HOST OF *Lymeon gastrodes* (Cummings) (TRICHODECTIDAE)

Conclusive evidence for the presence of *Lymeon gastroides* (Cummings) on the two-toed sloth (*Chloepus didactylus* (Linné)) is now available. Through the courtesy of Dr. Alfred E. Emerson of the University of Chicago, the author received five specimens of the above species (including one male) which Dr. Emerson personally collected from a two-toed sloth at Kartabo, British Guiana, in 1924. He stated that the Mallophaga were so firmly attached to the hair that he had to clip off the hairs in order to preserve the specimens. Three specimens have been kept as such in alcohol and two have been mounted. During the mounting process, a considerable amount of sloth hair was removed from the abdomens of the two lice. The material is identical with Werneck's description (1950: 196, figs. 301–05), and nothing can be added to his able diagnosis.

Since the occurrence of *Lymeon* on the sloth is now confirmed, it would be worthwhile to repeat Hopkins' (1949: 543) statement, "The uncomfortably close resemblance between *Lymeon* and *Procavicola* is possibly accounted for by the stock which gave rise to the Edentata and that which was ancestral to the Procaviidae having originated from the proto-Insectivora close together."

BIBLIOGRAPHY

HELLMAYR, C. E. and B. CONOVER. 1948. Zool. Ser., Field Mus. Nat. Hist. 13 (Pt. I, No. 3).

HOPKINS, G. H. E. 1949. Proc. Zool. Soc. Lond. 119 (Pt. II): 387–604.

HOPKINS, G. H. E. and T. CLAY. 1952. "A check list of the genera and species of Mallophaga." Brit. Mus. (Nat. Hist.)

KELLOGG, V. L. and S. I. KUWANA. 1902. Proc. Wash. Acad. Sci. 4: 457–99.

SNODGRASS, R. E. and E. HELLER. 1904. Proc. Wash. Acad. Sci. 5: 231–372.

TIMMERMANN, G. 1951. Ann. Mag. Nat. Hist. (Ser. 12) 4: 390–401.

WERNECK, F. L. 1950. "Os Malófagos de Mamíferos, Pt. II." Inst. Oswaldo Cruz, Rio de Janeiro.

A Migratory Flight of Dragonflies

On Sepember 20, 1952, Mr. and Mrs. Allan D. Cruickshank observed an unusual flight of dragonflies at Todd's Point, on Long Island Sound near Old Greenwich, Connecticut. The flight was in progress when they arrived at the point at noon, and continued for the next two hours. Thousands of dragonflies passed the point during this period, all moving in a southwesterly direction; they passed in groups, and over a hundred were in sight at a time. Several species were present, but about 90 per cent of the flight consisted of two species. Specimens of these two were collected and sent to the writer for determination; they were *Anax junius* (Drury) and *Trapezostigma lacerata* (Hagen).

Large-scale migratory flights of dragonflies are probably fairly regular in various parts of the United States, but references in the literature to such flights are relatively scarce. Shannon[1] and Osburn[2] have reported flights similar to that observed by the Cruickshanks, and Shannon has mapped some

[1] Sci. Monthly, 3: 227–240. 1916.

[2] Jour. N. Y. Ent. Soc., 24: 90–92. 1916.

of these fights; Walker,[3] Wright,[4] and others have reported swarms that may possibly represent migrating groups.

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New Taxonomic Entities in Neotropical Aeshnas (Odonata: Aeshnidae) II *

By Philip P. Calvert, University of Pennsylvania and Academy of Natural Sciences of Philadelphia

On making a recheck of the available material of *Aeschna punctata* Martin, a male, identified by Dr. Erich Schmidt and by myself as *punctata*, and whose genitalia of the second abdominal segment were found coated with a hardened substance, was cleaned and the anterior lamina found to lack spines, which are present in *punctata*. This absence justifies the recognition of this male as of a separate species and furnishes the second instance of a species of the subgenus *Hesperaeschna* lacking these spines, the first case being *manni* E. B. and J. H. Williamson 1930; in *psilus* Calvert 1947 these spines are rudimentary. This new species is here and now published for the same reasons that influenced the appearance of No. I.

Aeshna (Hesperaeschna) decessus n. sp.

The specific name, not hitherto used in the Odonata, Latin decessus, departure, is in allusion to the absence of spines from the anterior lamina.

Holotype male and unique specimen: Brazil, Südh(äng) Itatiaya-Gebirg., 700 m., Rio de Janeiro, X .31, Zikan, No. P.P.C. 29, coll. of Dr. Erich Schmidt, Bonn am Rhein, Germany.

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[3] Canad. Ent., 49: 171–178. 1917.

[4] Fla. Ent., 28: 11–13. 1945.

* Number I was published in the News for December, 1952, Vol. LXIII, No. 10, pp. 253–264.

Face chrome orange, upper margin of anterior surface of frons black. A black line on the fronto-clypeal suture. Width of frons 5.40 mm., maximum width of head 11.44 mm.

Dorsal surface of frons with a transverse basal black stripe embracing the vertex, ocelli and bases of the antennae and continued as a black line along the eye-margin of the frons, and a black T-spot whose stem is of subuniform width (1.39 mm.), bordered on each side by a chrome orange stripe .47 mm. wide, this in turn by a purplish area extending laterad beyond the level of the pointed end of the top of the T of the same side.

Labrum chrome orange, a black line on the clypeo-labral suture, distal margin hardly edged with brown. Vertex chrome orange, margined with black laterally and posteriorly.

Pronotum chrome orange, a pair of black dots on its middle division; whitish and pale brownish hairs 2.04 mm. long on the hind margin.

Pterothorax burnt sienna; a greenish antehumeral stripe 2.86 mm. long, not reaching the antealar sinus by 1.00 mm. and barely diverging from its fellow of the opposite side. Tibiae reddish both superiorly and inferiorly.

Maximum width of abdominal segment 2 6.22 mm., narrowest width of segment 3 1.64 mm., width of hind end of segment 4 3.52 mm., of segment 9 3.27 mm. Ground color reddish brown, dorsum of 10 chiefly chrome orange, the following pale markings pale green or pale blue, designated according to the notation of Prof. E. M. Walker 1912: AD present as a middorsal stripe on segment 2, very indistinct or faded on 4–8, present on 9; MD a small transverse spot on 4–9, separated from its fellow of the opposite side, fused with PMD * on 4–7; PD a pair of large spots on 3–9, separated by middorsal brown or black, the separation wider on 8 and 9 than on preceding segments; AL present on 1–8, fused with ML and PL on 1; ML present on 3–9; PL present on 4–9, fused with ML on 4–8.

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* PMD, postmid-dorsal, not included in Prof. Walker's scheme, is a pale spot found in a number of neotropical Aeshnas on each side of the dorsum between MD and PD.

Spines completely absent from the anterior lamina. Genital lobe projecting 1.00 mm. beyond the lateral margin of abd. seg. 2, length at base, measured along the prolonged ventral margin of 2, 2.45 mm.

Superior appendages very similar to those of *punctata*, the arch of the superior carina and the depth of the appendage below the lateral margin, as seen in lateral edge view, the same as in a male of the latter species from Nova Teutonia, Brazil.

Venation in the anterior half of each wing with a reddish yellow tinge. Pterostigma brown ochre above, clay yellow below. Membranule pale clay yellow in its proximal .36, brown grey in the distal .64. Cells in the discoidal triangle of the front wings 7 right, 6 left, of the hind wings 7 right, 6 left, 2 cells on the proximal side in all four. Internal triangle 2-celled in all four wings. Distal thicker antenodal fifth on the front wings, sixth on the hind. Supratriangulars 4 on the front, 3 on the hind. Antenodals 20 on the front, 14 on the hind; postnodals 19 and 18 on the front, 23 on the hind.

Dimensions: Total length 78 mm. Abdomen (excl. apps.) 59, sup. apps. 5.73, hind wing 51, max. width 16, pterostigma, front wing, costal margin 2.95 mm.

Decessus is almost unique among neotropical Aeshnas by the chrome orange color on the head. In this respect it is most closely approached by *biliosa* Kennedy in which the head of the male is colored with bright chrome lemon. The pale colors of the head of most species of *Hesperaeschna* are blues or greens. The combination of chrome orange on the head and the absence of spines from the anterior lamina distinguishes *decessus* from all its allies.

The diagnostic characters of the subgenus *Hesperaeschna* are stated on page 254, Ent. News, LXIII, 1952.

Some Syrphid Fly Synonomy

By C. L. Fluke, University of Wisconsin

There are several cases of synomony, principally my own, which I wish to clear up at this time.

Mesograpta versus Mesogramma

1865. *Mesogramma* Loew, Berl. Ent. Zeitsch. 9: 157 (Not Stephens, 1850, List Brit. Animals, Brit. Mus., Lepidoptera, p. 183).
1872. *Mesograpta* Loew, Berl. Ent. Zeitsch. 16: 114.

It is interesting to note that Loew changed from *Mesogramma* to *Mesograpta* because of preoccupation in Botany. Aldrich in his catalogue went back to *Mesogramma* indicating that the change was not valid.

Early last spring W. W. Wirth of the U. S. National Museum called my attention to the use of *Mesogramma* by Stephens in 1850 in Lepidoptera. Even though *Mesogramma* Stephens stands as an objective synonym of another name in *Geometridae*, the name is not available for these common American *Syrphidae*. It is therefore necessary to go back again to *Mesograpta* Loew. We are indebted to Miss Ina Hawes who called our attention to the above preoccupation.

Lunomyia brooksi (Curran)

1927. *Parhelophilus brooksi* Curran, Can. Ent. 59: 90.
1939. *Lunomyia pollinaria* Fluke, Ann. Ent. Soc. Amer. 32: 373.

I overlooked Curran's species primarily because he described it in *Parhelophilus* instead of in *Lunomyia*. Hull, Trans. Zool. Soc. London 26: 386, places *Lunomyia* as a subgenus of *Asemosyrphus*.

Rhysops neotropicum (Curran)

1937. *Melanostoma neotropicum* Curran, Amer. Mus. Novit. No. 926: 4.
1945. *Rhysops columella* Fluke, Amer. Mus. Novit. No. 1272: 8.

Volucella beatricea Hull

1950. *Volucella beatricea* Hull, Rev. de Entomologia 21: 235.
1951. *Volucella ecuadorea* Fluke, Amer. Mus. Novit. No. 1503: 14.

I have not seen Hull's type which was a female from Ecuador but believe there is no question about the synonymy.

Allograpta micrura (Osten Sacken)

1877. *Sphaerophoria micrura* Osten Sacken, Western Dipt. 330.
1884. *Sphaerophoria picticauda* Bigot, Ann. Soc. Ent. France, p. 102.
1942. *Epistrophe micrura* and *picticauda* Fluke, Amer. Mus. Novit. No. 1201: 14 & 15.
1950. *Allograpta micrura* Fluke, Trans. Wis. Acad. Sci. Arts and Lett. 40: 146.

This species, which has been shoved around in different genera, is a true *Allograpta* based on a study of the genitalia.

Current Entomological Literature

Compiled by VENIA T. PHILLIPS, Librarian

Academy of Natural Sciences of Philadelphia

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania pertaining to entomology, including all arthropods except Crustacea. Coverage will be world-wide as regards major contributions to systematics as well as for all papers on morphology, physiology, embryology, etc. In addition, for species from the Americas and the Pacific (Nearctic, Neotropical and Polynesian regions) all minor contributions to taxonomy, distribution, etc., will also be recorded.

This list gives references of the year 1953 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

Note: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in Entomological News are not listed.

GENERAL—**Birch, L. C.**—Experimental background to the study of the distribution and abundance of insects. III. The relation between innate capacity for increase and survival of different species of beetles living together on the same food. [62] 7: 136–44. **Campau, E. J., G. J. Baker and F .D. Morrison.**—Rearing stable fly for laboratory tests. [76] 46: 524. **Dashman, T.**—Terminology of the pretarsus. [52] 46: 56–62, ill. **Doderlein, L.**—Bestimmungsbuch für deutsche Land- und Susswassertiere. Insekten I. Teil, Käfer, wespen, libellen, heuschrecker usw. 2d ed. enl. von Werner Jacobs. Munchen, R. Oldenbourg, 1952. 315 pp., ill. **Härdtl, H.**—Untersuchungen über die Fauna der Taraxacum-arten. [28] 3: 69–95. **Hassanein, M. H.**—Studies on the effect of pollinating insects, especially the honey-bee, on the seed yield of clover in Egypt. [139] 46: 337–44, ill. **Ibarra Grasso, A.**—Construccion de bisturies para laboratorio. [133] 15: 294–96, ill., 1952. **Jacobs, W.**—(See under Doderlein, L.) **Klock, J. W., D. Pimentel and R. L. Stenburg.**—A mechanical fly-tagging device. [Science] 118, no. 3054: 48–9, ill. **Rautenberg, L. E.**—Berichtigung zur Abhandlung von Kraatz über Jacob Sturm's "Insecten Cabinet." [28] 3: 105–11, ill. **Rings, R. W. and G. W. Layne, Jr.**—Radioisotopes as tracers in plum curculio behavior studies. [76] 46: 473–77. **Ross, H. H.**—On the origin and composition of the nearctic insect fauna. [62] 7: 145–58, ill. **Stroud, C. P.**—An application of factor analysis to the systematics of Kalotermes. [146] 2: 76–92, ill. **Tibbetts, T.**—Ectoparasites from mammals at Camp Lejeune, North Carolina. [76] 46: 530. **Wille, J. E.**—Entomologia agricola del Peru. 2d ed. Junta de Sanidad Vegetal, Dir. gen. de agr., Ministerio de agricultura, Lima. viii + 544 pp., ill., 1952. (Reviewed in [28] 3: 208–09.) **Woolley, T. A.**—Some acarological techniques. [76] 46: 366.

BIOGRAPHIES, OBITUARIES—Banks, Nathan, 1868–1953.—Obitutary notice by P. J. Darlington, Jr. [52] 46: 173. **Blair, Kenneth Gloyne, 1882–1952.**—Obituary and short biography, by H. Sachtleben. [28] 3: 222. **Boldt, Rudolf, 1874–1952.**—In memoriam, by B. J. Lempke. [57] 14, no. 337, 301–02. **Cook, Melville Thurston,** 1859–1952. Obituary by E. L. LeClerg. [52] 46: 172. **Esselbaugh, Charles Orris,** 1898–1952.—Obituary signed M.T.J. [52] 46: 172–73. **Mutchler, Andrew J.,** 1869–1952. An appreciation. (Biography, with portrait and bibliography.) By various authors. [101] 61: 37–44. **Van Dyke, Edwin Cooper,** 1869–1952.—Biography, with portrait and bibliography of entomological writings, by E. O. Essig. [111] 29: 73–97. **Walton, William Randolph,** 1873–1952.—Obituary, with portrait, by W. A. Baker and J. S. Wade. [76] 46: 532–33.

ANATOMY, PHYSIOLOGY, MEDICAL—Aboul-Nasr, A.—On the effect of carbon tetrachloride upon etherized Drosophila virilis. [139] 46: 121–26. **Arvy, L. and M. Gabe.**—Données histophysiologiques sur les formations endocrines rétrocérébrales de quelques odonates. [18] 14: 345–74, ill., 1952. **Autrum, H.**—Neue Untersuchungen ueber das Sehen der Insekten Insbesondere der Bienen. [18] 14: 439–47, ill., 1952. **Azab, A. K.**—The effect of various types of food upon the rate of development of the larvae of Stegobium paniceum L. (Anobiidae). [139] 46: 127–47. The influence of yeast upon the rate of development of the larvae of Stegobium paniceum L. (Anobiidae). [139] 46: 149–65. **Bartlett, B. R.**—A tactile ovipositional stimulus to culture Macrocentrus ancylivorus on an unnatural host (Braconidae). [76] 46: 525. **Biliotti, E.**—Importance et signification des arrêts de développement au stade nymphal chez Thaumetopoea processionea L. [2] 256: 1703–05. **Brauns, A.**—Die Typen der Stigmenverteilung bei Terricolen Dipterenlarven. [159] 150: 171–78, ill. **Bückmann, D.**—Ueber den Verlauf und die Auslösung von Verhaltensänderungen und Umfärbungen erwachsener Schmetterlingsraupen. [Biol. Zentralbl.] 72: 260–70. **Chadwick, L. E., J. B. Lovell and V. E. Egner.**—The effect of various suspension media on the activity of cholinesterase from flies. [30] 104: 323–33. **Day, M. F. and H. Irzykiewicz.**—Feeding behaviour of the aphids Myzus persicae and Brevicoryne brassicae, studied with radiophosphorus. [Aust. Jour. Biol. Sci.] 6: 98–108. **Eisa, E. A. and A. A. Soliman.**—The chemoattraction of food constituents to insects. I. Chemoattraction of foods to cockroaches. [139] 46: 167–72, ill. **Ellis, P. E.**—Social aggregation and gregarious behaviour in hoppers of Locusta migratoria migratorioides (R. & F.). [Behaviour, Leiden] 5: 225–60, ill. **Grégoire, C.**—Blood coagulation in arthropods. III. Reactions of insect hemolymph to coagulation inhibitors of vertebrate blood. [30] 104: 372–93, ill. **Grison, P. and C. Biliotti.**—Quelques aspects de la biocénose des chenilles processionnaires. [18] 14: 423–32, 1952. **Hackman, R. H.**—Chemistry of insect cuticle. 1. The water-soluble proteins. [Biochem. Jour.] 54: 362–67. 2. The water-insoluble proteins of the cuticle of Aphodius howitti Hope (Col.). *Ibid.* 367–70. 3. The hardening and darkening of the insect cuticle. *Ibid.* 370–77. **Hafez, M.**—Studies on Tachina larvarum L. (Tachinidae). II. Morphology of the adult and of its early stages. [139] 46: 267–363, ill. III. Biology and life-history. *Ibid.* 305–35, ill. **Hassanein, M. H.**—Studies on the normal and pathological histology of the alimentary canal of the honey-bee. [139] 46: 345–57, ill. **House, V. L.**—The interaction of mutants affecting venation in Drosophila melanogaster. I. Interaction of hairless, engrailed and cubitus interruptus. [Genetics] 38: 199–215. **Jovancic, L.**—Genèse des pigments tégumentaires de la mante religieuse et d'autres animaux leur role biologique et physiologique. [39] 87: 92–104. **Judd, W. W.**—A caterpillar (Phalaenidae) from the digestive tract of a human. [80] 39: 250–51, ill. **Kato, M.**—The ecological investigation concerning the relation between the climatic conditions and the population density of the rice leaf-miner. [150] 18: 324–30, 1950. **Khalifa, A.**—Biological observations on Polistes gallicus L. and Polistes foederata Koch, with special reference to stylopization (Vespidae). [139] 46: 371–403, ill. **Krause, J. B. and M. T. Ryan.**—The stages of development in the embryology of the horned Passalus beetle, Popilius disjunctus Illiger. [52] 47: 1–20, ill. **Li, C. S.**—External morphology and internal anatomy of the blister beetle, Mylabris phalerata Pall. [Essays and papers in memory of Fu Ssu-Nien, Nat. Taiwan Univ.] 1952: 505–54, ill. **Mahmoud, M. I. Zeid, P. A. Dahm, R. E. Hein and R. H. McFarland.**—Tissue distribution, excretion of $C^{14}O_2$ and degradation of radioactive pyrethrins administered to the American cockroach. [76] 46: 324–36. **Marchand, H.**—Die Bedeutung der Heuschrecken und Schnabelkerfe als Indikatoren verschiedener Graslandtypen. [28] 3: 116–62. **Mathis, M.**—Mise en évidence dans une colonie d'abeilles d'un centre thermique autorégulateur résistance de ce centre aux chocs thermiques. [18] 14: 433–37, ill., 1952. **Mer, G. G. and W. Furmaska.**—The effect of the fat content in the fly food on the resistance to D.D.T. [123] 14: 49–54. **Metcalf, R. L. and R. B. March.**—Further studies on the mode of action of organic thionophosphate insecticides. [52] 46: 63–74. **Mukerji, D. and R. N. Sinha.**—Effect of food on the life history of the flour beetle, Tribolium castaneum Herbst. [82] 26: 118–24. **Noirot, C.**—Les soins et l'alimentation des jeunes chez les termites. [18] 14: 405–14, 1952. **Nuorteva, P.**—Die Nahrungspflanzenwahl der Insekten im Lichte von Untersuchungen an Zikaden. (Eng. summary: Host plant selection in insects in the light of investigations made on leafhoppers.) [Ann. Acad. Scient.

Fennicae, Ser. A, IV] no. 19, 90 pp. **Perry, A. S., A. M. Mattson and A. J. Buckner.**—The mechanism of synergistic action of DMC with DDT against resistant house flies. [30] 104: 426–38. **Popham, E. J.**—The arrangement of the ommatidia in the eyes of Corixa distincta (Fieb.) and its relation to the posture positions of this insect. [60] 89: 100–02. Observations on the migration of corixids (Hem.) into a new aquatic habitat. [60] 89: 124–25. **Powning, R. F.**—Studies on the digestion of wool by insects. VIII. The significance of certain excretory products of the clothes moth, Tineola bisselliella, and the carpet beetle, Attagenus piceus. [Aust. Jour. Biol. Sci.] 6: 109–17. **Reiser, R., D. S. Chadbourne, K. A. Kuiken, C. F. Rainwater and E. E. Ivy.**—Variations in lipid content of the boll weevil and seasonal variation in its resistance to insecticides. [76] 46: 337–40. **Richard, G.**—Le role des organes sensoriels dans certaines phases du comportement des termites. [18] 14: 415–21, 1952. **Riggall, E. C.**—Mass movements of Coleoptera on the Lincolnshire Coast. [60] 89: 130–31. **Roeder, K. D.**—Insect physiology, John Wiley & Sons, N. Y. $15.00, xiv, 1100 pp., ill., 1953. (Review by G. S. Tullock [36] 48: 69.) **Rothfels, K. H. and R. W. Dunbar.**—The salivary gland chromosomes of the black fly, Simulium vittatum Zett. [44] 31: 226–41, ill. **Sahrhage, D.**—Oekologische Untersuchungen an Thermobia domestica (Packard) und Lepisma saccharina L. [Zeitschr. wiss. Zool., Abt. A] 157: 77–168. **Sato, S.**—Compound eyes of Culex pipiens var. pallens Coquillett. (Morphological studies on the compound eye in the mosquito, No. 1.) [150] 18: 331–41, ill., 1950. Larval eyes of Culex pipiens var. pallens Coquillett. (Morphological studies on the larval eye in the mosquito, No. 1.) [150] 19: 29–32, ill., 1951. **Seidenstuecker, G.**—Die plastische Modifikation des Flügels von Pyrrhocoris apterus Linné (Pyrrhocoridae). [28] 3: 29–55, ill. **Sieburth, J. F. and B. A. McLaren.**—Growth studies with the cockroach, Periplaneta americana (Linn.), fed vitamin-deficient diets, substituted with corresponding anti-vitamins. [52] 46: 43–48. **Smith, K. M. and N. Xeros.**—Studies on the cross-transmission of polyhedral viruses: Experiments with a new virus from Pyraemeis carui, the painted lady butterfly. [112] 43: 178–84, ill. **Smith, S. G. and D. E. Maxwell.**—Postreduction of the X-chromosome and complete chiasma interference in the Lampyridae. [44] 31: 179–92, ill. **Snodgrass, R. E.**—The metamorphosis of a fly's head. [131] 122, no. 3, 25 pp., ill. **Sotavalta, O.**—The essential factor regulating the wing-stroke frequency of insects in wing mutilation and loading experiments and in experiments at subatmospheric pressure. [Ann. Zool., Soc. Zool. Bot. Fennicae Vanamo] 15, no. 2, 67 pp., ill., 1952. Recordings of high wing-stroke and thoracic vibration frequency in some midges. [30] 104: 439–44, ill. **Stephens, G. C., M. Fingerman and F. A. Brown, Jr.**—The orientation of Drosophila to plane polarized light. [52] 46: 75–83. **Strickland, E. H.**—The ptilinal armature of flies (Schizophora). [44] 31: 263–99, ill. **Stride, G. O.**—The respiratory bubble of the aquatic beetle, Potamodytes tuberosus Hinton (Elmidae). [98] 171: 885–86, ill. **Suomalainen, H. O. T.**—Localization of chiasmata in the light of observations on the spermatogenesis of certain Neuroptera. [Ann. Zool., Soc. Zool. Bot. Fennicae Vanamo] 15, no. 3, 104 pp., ill., 1952. Occurrence and phylogenetic significance of a true sex chromosome bivalent in a lacewing, Boriomyia nervosa F. (Neuroptera, Hemerobiidae). [Archivum Soc. Zool. Bot. Fenn. Vanamo] 7: 45–9, ill. **Tahori, A. S. and W. M. Hoskins.**—The absorption, distribution and metabolism of DDT in DDT-resistant houseflies. [76] 46: 302–06. **Takaoka, M.**—Studies of the metamorphosis in insects. I. Partial puparium formation in Drosophila melanogaster. [150] 19: 88–90, ill., 1951. **Théodoridès, J.**—Enigmatical corpuscles in the body cavity of a scarabaeid beetle. [60] 89: 167–68. **Thompson, G. B.**—Contributions toward a study of the ectoparasites (Insects) of British birds and mammals. [19] ser. 12, v. 6: 401–25, ill. **Tulloch, G. S. and J. E. Shapiro.**—Brochosomes. [36] 48: 57–63, ill. **Van der Kloot, W. G. and C. M. Williams.**—Cocoon construction by the Cecropia silkworm. II. The role of the internal environment. [Behaviour, Leiden] 5: 157–74. **Verrier, M.-L.**—Le rhéotropisme et les larves d'éphémères. [39] 87: 1–33, ill. **Wilson, E. O.**—On Flanders' hypothesis of caste determination in ants. [115] 60: 15–20. **Zaazou, H. T.**—The effect of previous infestation on host selection (Bruchidae). [139] 46: 479–85. **Zebe, E.**—Ueber den respiratorischen Quotienten der Lepidopteren. [100] 40: 298.

ARACHNIDA AND MYRIOPODA—Archer, A. F.—Studies in the orbweaving spiders (Argiopidae). [13] 1622, 27 pp., ill. (*). **Arthur, D. R.**—The immature stages of Ixodes frontalis Panzer 1795 (Acarina). [112] 43: 175–77, ill. **Bergstrom, D. W.**—Hydracarina from the Rocky Mountain region. [11] 72: 157–62. **Brennan, J. A.**—A note on the chiggers of Jamaica (Acarina, Trombiculidae). [80]

39: 292–95, ill. **Chamberlin, R. V.**—Two new chilopods of the order Geophilida. [115] 60: 37–39, ill. **Finney, G. L.**—A technique for mass-culture of the six-spotted mite. [76] 46: 381–82. **Hedeen, R. A.**—A new species of Sarcoptes (Acarina, Sarcoptidae) from the cave bat. [80] 39: 334–35. **Heisch, R. B.**—On a spirochaete isolated from Ornithodoros graingeri (Acarina). [112] 43: 133–35. **and A. E. Harvey.**—The biology of Orinthodoros graingeri Helsch & Guggisberg, 1952 (Acarina). [112] 43: 131–32. **Hopla, C. E. and C. M. Downs.**—The isolation of Bacterium tularense from the tick, Amblyomma americanum. [82] 26: 72–73. **Knowlton, G. F.**—Spider captures honey bee. [36] 48: 70. **Kohls, G. M.**—Ixodes venezuelensis, a new species of tick from Venezuela, with notes on Ixodes minor Neumann, 1902 (Acarina, Ixodidae). [80] 39: 300–03, ill. **Lamb, K. P.**—A new species of Diptilomiopus Nalepa (Acarina, Eriophyidae) together with a key to the genus. [Trans. Roy. Soc. New Zealand] 80: 367–70, ill. **Láska, F.**—Ekologické a systematické Poznatky o vodulich (Hydrachelliae, Acari) Moravskoslezskych a Vsatskych Beskyd. (English summary.) [Spisy Masarykov Univ.] cislo 336: 132 pp., ill., 1952. **Mello-Laitao, C. de.**—Aranas de Maullin, colectadas por el ingeniero Rafael Barros V. [Rev. Chilena Hist. Nat.] 51/53: 327–38, ill., 1951 (*). **Muma, M. H.**—A study of the spider family Selenopidae in North America, Central America, and the West Indies. [13] 1619, 55 pp., ill. **Santa Maria, H. C. and H. C. Brugnoni.**—Un eriofido parasito de los citricos neuvo para la fauna Argentina, Aceria sheldoni (Ewing) (Acarina, Eriophyidae). [Revista, Fac. de Agron. Buenos Aires] 28: 257–63, ill., 1952. **Viets, K.**—Die aus Afrika bekannten wassermilben (Hydrachnellae, Acari). [Hydrobiologia, The Hague] 5: 1–178. **Woolley, T. A.**—Acarina. (See General.)

SMALLER ORDERS—Arvy, L. and M. Gabe.—Odonata. (See Anatomy.) **Bacigalupo, J.**—Las pulgas de ratas de Rosario como huespedes intermediarios de cestodes (Siphonaptera). [133] 15: 263–65, 1952. **Badcock, R. M.**—Observation of oviposition under water of the aerial insect Hydropsyche angustipennis (Curtis) (Trichoptera). [Hydrobiologia, The Hague] 5: 222–25. **Burroughs, A. L. and M. B. Britschgi.**—Sylvatic plague studies. X. Survival of rodent fleas in the laboratory (Siphonaptera, Pulicidae). [112] 43: 35–48. **Carpenter, F. M.**—The biology of Brachypanorpa (Mecoptera). [115] 60: 28–36, ill. **Cross, E. A. and G. F. Knowlton.**—Fleas on flying squirrel and barn swallow. [36] 48: 73. **Desneux, J.**—Notes sur la phylogénie des nidifications des Apicotermes. [18] 14: 393–96, 1952. **Edmunds, G. F.**—The type species of some genera of Ephemeroptera. [36] 48: 71–2. **Gardner, A. E.**—Further notes on exophytic oviposition in Odonata. [60] 89: 98–9. **Giles, E. T.**—The biology of Anisolabis littorea (White) (Dermaptera, Labiduridae). [Trans. Roy. Soc. N. Z.] 80: 383–98, ill. **Gray, H. E.**—Strepsiptera and leafhoppers. [36] 48: 74–5. **Hanson, J. F.**—Studies on the Plecoptera of North America: VI. Further notes on Isonenoides. [36] 48: 76–81, ill. **Jordan, C. R.**—A strepsipteran parasite of the three-cornered alfalfa hopper (Membracidae). [76] 46: 505. **Lane, J. E.**—A note on the discovery of a rare bat flea in Ohio (Ischnopsyllidae). [106] 53: 178. **Longfield, C.**—Oviposition in dragonflies (Odonata). [60] 89: 97. **Maillet, P. and N. Carasso.**—Reconstruction du fourreau larvaire chez un trichoptère Leptoceridae Triaenodes conspersa Ramb. [18] 14: 473–90, ill., 1952. **Mills, H. B. and W. R. Richards.**—Collembola from Arctic and boreal Canada. [82] 26: 53–59, ill. (*). **Muesebeck, C. F. W.**—Scientific names of the body and head lice (Anoplura, Pediculidae). [76] 46: 524. **Noirot, C.**—Isoptera. (See Anatomy.) **Richard, G.**—Isoptera. (See Anatomy.) **Sahrhage, D.**—Thysanura. (See Anatomy.) **Silvestri, F.**—Los insectos Japygidae hasta ahora conocidos de Chile. [Rev. Chilena Hist. Nat.] 51/53: 67–82, ill., 1951. **Stroud, C. P.**—Isoptera. (See General.) **Suomalainen, H. O. T.**—Neuroptera. (See Anatomy.) **Verrier, M.-L.**—Ephemeridae. (See Anatomy.) **Weesner, F. M.**—The biology of Tenuirostritermes tenuirostris (Desneux) with emphasis on caste development. [Publ. Zool., Univ. Calif.] 57: 251–302, ill. **Wray, D. L.**—Change of specific name of Isotoma (Collembola). [36] 48: 66. New Collembola from Puerto Rico. [Jour. Agr. Univ. Puerto Rico] 37: 140–50, ill. New North Carolina Collembola. [36] 48: 82–3.

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S. Ehara.—Effects of a dipterous parasite upon the grasshopper, Oxya yezoensis Shiraki. [Jour. Fac. Sci., Hokkaido Univ., Ser. 6] 11: 169–74, ill.

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Agr.] 42: 25–33. **Singh, B.**—Immature stages of Indian Lepidoptera. No. 8—Geometridae. [Indian Forest Records, n.s. Ent.] 8: 67–158, ill. **Smith and Xeros.**—(See Anatomy.) **Van der Kloot and Williams.**—(See Anatomy.) **Vasquez, G. L.**—Observaciones sobre pieridos mexicanos con descripciones de algunas formas nuevas. IV. Zerene caesonia Stoll. [88] 23: 257–67, ill., 1952. **Wyatt, A. K.**—Schinia jaguarina—its food plant (Phalaenidae). [36] 48: 70. **Zebe, E.**—(See Anatomy.)

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Chilena Hist. Nat.] 51/53: 355–58, 1951. **Fairchild, G. B. and M. Hertig.**—Notes on the Phlebotomus of Panama (Psychodidae). X. P. aragaoi, P. barrettoi and two new species. [52] 46: 21–34, ill. **Flitters, N. E. and P. S. Messenger.**—Bioclimatic studies of oriental fruit fly in Hawaii. [76] 46: 401–03. **Frohne, W. C.**—Natural history of Culiseta impatiens (Wlk.) (Culicidae) in Alaska. [11] 72: 103–18. **Frost, S. W.**—Tabanidae attracted to light. [52] 46: 124–25. **García, M.**—Las especies Argentinas del genero Philornis Mein., con descripcion de especies nuevas (Anthom.). [133] 15: 277–93, ill., 1952. **Hafez, M.**—(See Anatomy.) **Hase, A.**—Hautreaktionen nach Stichen der Gnitze Culicoides minutissimus Zett (Heleïdae). [Zeit. für Parasiten] 15: 519–37, ill. **House, V. L.**—(See Anatomy.) **Jobling, B.**—On the blood-sucking midge Culicoides vexans Stager, including the description of its eggs and the first-stage larva (Ceratopogonidae). [112] 43: 148–59, ill. **Kato, M.**—(See Anatomy.) **and M. Toriumi.**—Studies in the associative ecology of insects. I. Nocturnal succession of a mosquito association in the biting activity. II. Synecological investigation of the larval habitats of mosquitoes. [150] 18: 467–76, 1950. **LaBerge, W. E.**—A note on a phorid parasite of Pheidole dentata Mayr. [82] 26: 69. **Leví-Castillo, R.**—Nota sobre cuatro especies del género Haemagogus, Williston 1896 que son propias de la América Central (Culicidae). [Rev. Ecuatoriana Ent. y Paras.] 1, no. 2, 15–24, ill. **Macfie, J. W. S.**—Ceratopogonidae from Costa Rica. [28] 3: 95–105, ill. **Martin, C. H.**—The range of variation and a new synonym in the genus Myelaphus Bigot (Asilidae). [82] 26: 66–69, ill. **Nash, T. A. M. and W. A. Page.**—The ecology of Glossina palpalis in northern Nigeria. [126] 104: 71–169, ill. **Ponte, E. del and M. Castro.**—Las especies Argentinas de Psorophora (Culicidae). [133] 15: 211–30, ill., 1952. **Reinhard, H. J.**—New Mexican Tachinidae. [82] 26: 95–102. **Rothfels and Dunbar.**—(See Anatomy.) **Sato, S.**—(See Anatomy.) **Schoof, H. F. and G. A. Mail.**—Dispersal habits of Phormia regina in Charleston, West Virginia. [76] 46: 258–62. **Senior-White, R. A., G. Lewis and P. Lee.**—On swarming and mating in Anopheles aquasalis Curry. [40] 44: 163–73. **Snodgrass, R. E.**—(See Anatomy.) **Sotavalta, O.**—(See Anatomy.) **Stephens, Fingerman and Brown.**—(See Anatomy.) **Steyskal, G. C.**—Further notes on Diptera of tree trunks, with descriptions of two new species of Drapetis

(Empididae) and an abstract of a Finnish paper on Diptera by Tuomikoski. [Papers Mich. Acad. Sci., Arts and Letters] 38: 255–60, ill. **Strickland, E. H.**—(See Anatomy.) **Tahori and Hoskins.**—(See Anatomy.) **Takaoka, M.**—(See Anatomy.) **Uchida and Ehara.**—(See Orthoptera.) **Vaillant, F.**—Hemerodromia Seguyi, nouvel empidide d'Algérie destructeur de simulies. [Hydrobiologia, The Hague] 5: 180–88, ill. **Willett, K. C.**—The laboratory maintenance of Glossina. I. [112] 43: 110–30. **Wirth, W. W.**—American biting midges of the heleid genus Monohelea. [151] 103: 135–52, ill. (* k). Biting midges of the heleid genus Stilobezzia in North America. [151] 103: 57–85, ill. (k). **and F. S. Blanton.**—Studies in Panama Culicoides (Heleidae). II. Descriptions of six additional new species. [80] 39: 229–36, ill.

COLEOPTERA—Arnett, R. H., Jr.—A review of the beetle family Cephaloidae. [151] 103: 155–61, ill. (k). **Azab, A. K.**—(See Anatomy.) **Bechyné, J.**—Les chrysomélides vrais capturés par le Rév. Père Rio Buck à Rio Grande do Sul (Brésil méridional) (Phytophaga). [48] 4: 1–18, ill. (* k). **Birch, L. C.**—(See General.) **Blake, D. H.**—The chrysomelid beetles of the genus Strabala Chevrolat. [151] 103: 121–34, ill. **Cartwright, O. L.**—Scarabaeid beetles of the genus Bradycinetulus and closely related genera in the United States. [151] 103: 95–120, ill. **Cazier, M. A.**—A review of the scarab genus Acoma (Scarabaeidae). [13] 1624, 13 pp. (* k). **Clark, L. R.**—The ecology of Chrysomela gemellata Rossi and C. hyperici Forst., and their effect on St. John's wort in the Bright District, Victoria. [Aust. Jour. Zool.] 1: 1–62, ill. **Edwards, J. G.**—The peculiar clasping mechanisms of the phallus of males of Priacma (Cupesidae). [47] 7: 17–20, ill. Species of the genus Syneta of the world (Chrysomelidae). [153] 11: 23–82, ill. (k). **El-Kifl, A. H.**—Morphology of the adult Tribolium confusum Duv. and its differentiation from Tribolium (Stene) castaneum Herbst (Tenebrionidae). [139] 46: 173–249, ill. **Fisher, W. S.**—New species of Buprestis from Cuba. [Memorias Soc. Cubana Hist. Nat.] 21: 329–30, ill. **Gay, F. J.**—Observations on the biology of Lyctus brunneus (Steph.). [Aust. Jour. Zool.] 1: 102–10. **Hall, D. W. and R. W. Howe.**—A revised key to the larvae of the Ptinidae associated with stored products. [40] 44: 85–96, ill. **Krause and Ryan.**—(See Anatomy.) **Li, C. S.**—(See Anatomy.) **Luginbill, P., Sr. and H. R. Painter.**—

May beetles of the United States and Canada. [Tech. Bull. U. S. Dept. Agr.] no. 1060, 102 pp., 78 pls. (*). **Martínez, A.**—Insectos nuevos o poco conocidos—IX. Algunas notas sobre Bolbocerini Argentinos y Chilenos con descripcion de una especie nueva (Scarab. Geotrupinae). [133] 15: 314–27, ill., 1952 (k). **Pallister, J. C.**—The leaf beetles of north central Mexico collected on the David Rockefeller Mexican Expedition (Chrysomelidae). [13] 1623, 95 pp. (* k). **Papp, C. S. and G. A. Varga.**—Über die cryptorhynchinen-gattung Conotrachelus (Curculionidae). 2. Beitrag zur förderung der wissenschaftlichen zusammenarbeit mit dem neugegründeten "International Hylean Amazone Institute" in Manaos, Brasilien. [Portugaliae Acta Biologica] 3: 205–27, 1952. **Pennak, R. W.**—The larva of Zaitzevia parvula (Horn) (Elmidae). [11] 72: 135–39, ill. **Pic, M.**—Les Eurymetopum B. de la R. Argentine (Cleridae). [133] 15: 252–62, 1952 (k). Melandryidae (Col. Hétéromères) nouveaux. [19] ser. 12, v. 6, 333–36. **Powning, R. F.**—(See Anatomy.) **Riggall, E. C.**—(See Anatomy.) **Rings and Layne.**—(See General.) **Scherf, H.**—Der Schildkäfer dreht sich um. [Kosmos] 49: 264–65, ill. **Smith and Maxwell.**—(See Anatomy.) **Stride, G. O.**—(See Anatomy.) **Théodoridès, J.**—(See Anatomy.) **Tilden, J. W.**—Biological notes on Trirhabda flavolimbata (Chrysomelidae). [47] 7: 20–23. **Van Dyke, E. C.**—The Coleoptera of the Galapagos Islands. [Occas. Papers, Calif. Acad. Sci.] 22, 181 pp., ill. (* k). New Coleoptera from western North America (Carabidae, Melasidae, Buprestidae, Curculionidae). [111] 29: 102–07. (Carabidae, Throscidae, Curculionidae). *Ibid.* 98–101. A new cossonid beetle from California, probably introduced (Curculionidae). [111] 29: 107–08. **Viana, M. J.**—Nueva subfamilia de Curculionidae, para la Argentina y Bolivia, subfamily Schöenherriellinae. [133] 15: 231–36, ill., 1952. **Wichmann, H. E.**—Der Reigenflug der Borkenkäfer. [159] 150: 105–12, ill. **Young, F. N.**—Two new species of Matus, with a key to the known species and subspecies of the genus (Dytiscidae) . [52] 46: 49–55, ill. Two new species of water beetles from Florida (Dytiscidae). [115] 60: 21–27, ill. The water beetles of the Bahama Islands, British West Indies (Dytiscidae, Gyrinidae, Hydrochidae, Hydrophilidae). [13] 1616, 20 pp. **Zaazou, H. T.**—(See Anatomy.)

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ENTOMOLOGICAL NEWS

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Collecting and Culturing of Native Wood Roaches in Ohio, with some Additional Notes on their Parasites

By Lafe R. Edmunds,[1] Department of Zoology and Entomology, The Ohio State University, Columbus, Ohio

In a previous paper (Edmunds, 1952a), the results of studies made during 1950–51 on the parasites and habits of wood roaches were described. These studies were continued through 1952, and numerous additional parasites of wood roach egg capsules were obtained. A method was also developed for the collecting and culturing of wood roaches. Information on this method together with data on the parasites is summarized as follows.

Collecting and Culturing Wood Roaches

Collecting. Parcoblatta pensylvanica (De Geer) and *Parcoblatta virginica* (Brunner) can be found in the wooded areas of Ohio at almost any season of the year. Cultures of wood roaches can be started from adults or nymphs collected in their natural habitats which include old buildings, wood piles, stacks of lumber, and the loose bark of dead trees.

Wood roaches will usually run rapidly when the cover under which they are resting is removed by the collector. The small roach nymphs can be picked up with an aspirator, but the larger nymphs and adults must be caught with a pair of tweezers or the fingers. During the winter and early spring the overwintering nymphs cannot run very rapidly due to the cold, and this is a good time to collect them.

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[1] Ass't Sanitarian, Communicable Disease Center, Public Health Service, Federal Security Agency, Mitchell, Nebraska. This work was done while the author was a Graduate Assistant, Department of Zoology and Entomology, The Ohio State University.

Rearing Procedure. When wood roaches have been collected they can be reared in large glass battery jars (Fig. 1). The bottom of each jar is covered with about an inch of wood shavings to absorb waste and moisture. To keep the roaches from escaping from these jars, the sides are greased with vaseline, and the top is covered with cheese cloth held in place by a strong rubber band. Strips of bark 2 inches wide and 4 inches long can be cut from a dead tree, and several pieces placed one above the other in the jar. The bark provides excellent cover and a natural resting place for the roaches.

Wood roaches were found to feed readily on commercial dog biscuits which come prepared in the form of pellets. A small dish of these pellets can be kept in the culture jar and replenished every 2 weeks. Commercially prepared rabbit foods were not suitable.

Water was supplied by using a small plastic dish with a tight fitting lid. A hole was drilled through the lid and a roll of dental cotton inserted through the hole so that 2 inches projected into the dish, and one-half inch projected out through the hole. When the dish was filled with water the dental cotton acted as a wick, and provided a constant supply of water.

The wood roaches thrive at temperatures between 70° and 80° F. and humidity of about 75%. The humidity was maintained near this level by placing the culture jars in a closed cabinet containing a pan of saturated salt water.[2] A pan 2 inches deep and 6 inches square filled with saturated salt solution maintained a humidity between 70–75% in the closed cabinet.

The female wood roaches drop the oothecae without attaching them. These capsules are scattered in the debris on the floor of the jar. At 1-week intervals these unhatched egg capsules can be collected by sifting through the debris, and they can be placed in other culture jars to start new colonies.

[2] Sodium chloride.

Wood Roach Parasites

Parasites of Adult or Nymphs. A red mite, *Pimeliaphilus podapolipophagus* Tragardh, will sometimes attack and destroy a culture of wood roaches. This parasite was also reported by Piquett and Fales (1952), as one which attacks cultures of American roaches, *Periplaneta americana* (Linn.). Fisk (1952) controlled mites in a culture of American roaches by dusting the interior of the culture jar with 5% Ovotran dust, and spraying the exterior with a 5% Ovotran spray. There was no apparent harm to the hosts.

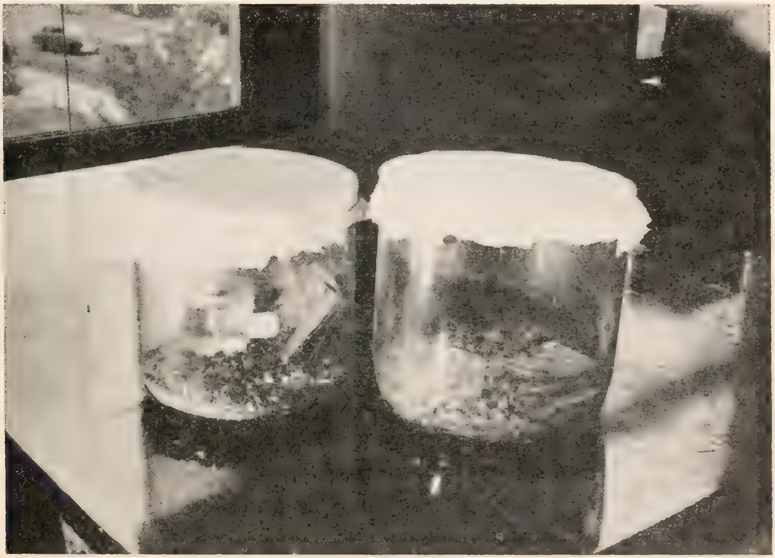

Fig. 1. Two 5-gallon glass jars of the type used for culturing wood roaches. Each jar contains a plastic watering dish with a cotton wick.

Parasites of Egg Capsules. To gather additional information on the parasites of wood roach egg capsules, collections were made in Franklin, Delaware, and Allen Counties, Ohio, during 1951–52. The capsules were sorted readily into two sizes. The larger capsules, some 296 in number, are believed to be those of *Parcoblatta pensylvanica* and the smaller capsules, 24 of them, are probably those of *Parcoblatta virginica.*

Almost 13% of the egg capsules collected under natural conditions showed evidence of previous parasite emergence. The normal roach capsules from which the roach nymphs have emerged can be separated in the following way from the capsules which have had parasites emerged from them.

Roach nymphs emerge from the egg capsule by crawling out between the loosened edges of the seam which runs along one side of the capsule. The empty egg pockets are left as a dry lattice inside the capsule. Lawson (1949) states that the pressure of the expanding nymphs in the hatching capsule ruptures the seam at first in the central portion but later along its entire length. The two halves of the seam are lifted back, the egg shells are broken dorsally at the same time, and the heads of the nymphs extend into the space thus opened.

The parasites emerge from the capsule by chewing a hole through the wall. The edges of the seam remain together. The parasite exit holes vary in size from some as small as a pin prick for *Syntomosphyrum blattae* Burks to others as large as 2.0 mm. in diameter for *Hyptia thoracica* (Blanchard). The species of *Hyptia* make a single exit hole. *Systellogaster ovivora* Gahan and *Syntomosphyrum blattae* Burks sometimes make two or three openings at different places on the same capsule. After the parasites have emerged the capsule is empty except for a small amount of loose debris.

The collected oothecae were incubated in glass tumblers covered with white organdy held in place by a rubber band. As the parasites emerged from the egg capsules they were collected and preserved in vials of alcohol.

For identification, these parasites were sent to C. F. W. Muesebeck of the Division of Insect Identification, Bureau of Entomology and Plant Quarantine. The determinations of the Evaniidae were made by Luella M. Walkley and the other Hymenoptera by B. D. Burks.

A total of 906 parasitic Hymenoptera was obtained. Evaniidae emerged from nine egg capsules, one individual from each capsule. These evaniids were identified as five *Hyptia harpyoides* Bradley which emerged from the small capsules, and four *Hyptia thoracica* (Blanchard) from the large egg capsules. The remaining parasites emerged in large numbers from other parasitized oothecae; 200 specimens from 2 egg capsules were identified as *Tetrastichus hagenowii* (Ratz.), and 328 specimens from 12 capsules as *Systellogaster ovivora* Gahan. An additional 369 specimens of *Syntomosphyrum blattae* Burks emerged from 5 capsules.

Table I. Parasitism of Wood Roach Egg Capsules collected in Franklin, Delaware, and Allen Counties, Ohio, during 1951 and 1952

Date Collected	Egg Capsules Collected	Capsules Parasitized by Evaniidae	Capsules Parasitized by Other Parasites	Capsules Showing Previous Emergence
8-8-51	16	2	0	1
10-28-51	5	1	0	1
12-1-51	11	2	3	1
1-15-52	26	0	1	4
3-20-52	148	2	4	22
3-30-52	48	0	5	4
4-27-52	48	0	5	6
5-16-52	18	2	1	4
Total	320	9	19	43

A study of the accumulated data on parasite emergence (Table I) for all capsules of all sizes shows that 8.7% of the capsules collected during 1951–52 were parasitized. The evaniids alone parasitized 2.8% of the wood roach oothecae.

Acknowledgments are made to Dr. Carl Venard, Dr. Alvah Peterson, and Dr. Donald J. Borror of the Department of Zoology and Entomology, of The Ohio State University for their assistance in this study; also to Leslie D. Beadle, Sanitarian, U. S. Public Health Service, for his aid.

SUMMARY

Wood roaches collected from their natural habitats can be cultured in large glass battery jars provisioned with pellet-type dog biscuits, a constant water supply, and a resting place made of

bark. The roaches thrive best at temperatures of from 70° to 80° F., and relative humidity of approximately 75%.

Parasites emerged from 28 of 320 wood roach egg capsules collected in the field during 1951–52. The parasites were identified as *Hyptia harpyoides, Hyptia thoracica, Systellogaster ovivora,* and *Syntomosphyrum blattae. Tetrastichus hagenowii* known previously only from domestic roaches was reared from wood roach capsules. A mite, *Pimeliaphilus podapolipophagus* was found attacking adult and nymphal roaches.

Selected References

Burks, B. D. 1952. The North American species of *Syntomosphyrum.* Proc. Ent. Soc. Wash. 54(5) : 258–264.

Edmunds, L. R. 1952a. Some notes on the habits and parasites of native wood roaches in Ohio (Orthoptera: Blattidae). Ent. News 63(6) : 141–145.

——. 1952b. A study of the biology and life history of *Prosevania punctata* (Brullé) with notes on additional species (Hymenoptera: Evaniidae). Doctoral Dissertation, The Ohio State University.

Fisk, F. W. 1952. Use of a specific mite control in roach and mouse cultures. Jour. Econ. Ent. 44(6) : 1016.

Lawson, F. A. 1949. Structural and insecticidal studies of cockroach egg capsules. Doctoral Dissertation, The Ohio State University.

Peterson, A. 1949. A manual of entomological equipment and methods. Edward Bros. Inc., Ann Arbor, Michigan. p. 20.

Piquett, P. G. and Fales, J. H. 1952. Rearing cockroaches for experimental purposes. U.S.D.A. Bur. of Ent. and Plant Quar. ET-301, 11 pp.

Rau, P. 1940. The life history of the wood roach *Parcoblatta pensylvanica* (De Geer). Ent. News. 51: 4–9, 33–35.

The Occurrence of Anax longipes Hagen in Mississippi (Odonata: Aeshnidae).

By George H. Bick, Tulane University,
New Orleans, Louisiana

Davis (1914) recorded a number of examples of *longipes* from Pass Christian, Mississippi, collected by Mr. and Mrs. F. F. Hunt in the month of March. Wright (1939) stated that he "has collected in the vicinity of Pass Christian and other localities of like nature in the Central Gulf Coast, but has neither seen nor heard of any other collection of this species." In my (1950) *Dragonflies of Mississippi* I repeated the information given by Davis and by Wright and stated that all material seen from the Pass Christian area was *Anax junius*. *Longipes* was not included in Westfall's (1952) *Additions*.

I was therefore impressed when a single adult male of *longipes* from Mississippi was found in the Tulane University Collection. The specimen was collected at Lucedale (George County) on June 9, 1949, by Dr. George H. Penn and Mr. E. N. Lambremont. Lucedale is 60 miles northeast of Pass Christian and 35 miles due north of the Gulf.

The addition of *longipes* to the Mississippi list brings the total Anisoptera recorded from the State to 74.

I have always thought that *longipes* was rare in the United States. Indeed, Hine (1913) stated, "It does not appear that more than a score of specimens are in the collections of the world." I, therefore, became interested in checking its U. S. distribution and was surprised to learn that there are in the literature several records of its occurrence in each of the following states: Massachusetts, New York, New Jersey, Pennsylvania, Maryland, North Carolina, South Carolina, Georgia, Florida, Ohio.[1] It appears that *longipes* is fairly widespread in eastern U. S. Its presence along the Atlantic Coast from Massachusetts to Florida seems quite certain, and the Ohio and the Mississippi records indicate that it is probably present throughout the Eastern United States.

I was even more surpised to learn that several workers have considered it locally abundant. Gray (1937) found it surprisingly common in the Woods Hole Region of Massachusetts and Davis (1914) stated that it was not uncommon at least during some years on Long Island, New York. Beatty (1945, 1946) found it abundant on some days, and sometimes far exceeding *junius* in point of numbers at Upton, New Jersey,

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[1] I do not think it practical to list the 32 citations which were accumulated to support these state records.

Davis and Fluno (1938) recorded it as fairly common at Winter Park, Florida.

However, records of the nymphs are still quite scanty. Calvert (1934) recorded two male exuviae from Primos, Pennsylvania, and seven female exuviae from Enterprise, Florida. Byers (1934) recorded nine nymphs "probably *longipes*" from Alachua County, Florida. Gray (1937) stated that one nymph from Woods Hole, Massachusetts, transformed in the laboratory but that an association of the adult with a specific exuvium was impossible.

Because records of the adults indicate a widespread distribution and because *longipes* is apparently common in some areas, aquatic biologists in Eastern U. S. should be cautioned not to assume that all *Anax* nymphs are *junius* and to utilize the key given by Calvert (1934) before reaching a decision.

Literature Cited

Beatty, G. H. 1945. Odonata collected and observed in 1945 at two artificial ponds at Upton, New Jersey. Bull. Brook. Ent. Soc. 40(5): 178–187.

——. 1946. Dragonflies (Odonata) collected in Pennsylvania and New Jersey in 1945. Ent. News 57(2): 50–56.

Bick, G. H. 1950. The dragonflies of Mississippi. Amer. Mid. Nat. 43(1): 66–78.

Byers, C. F. 1934. Records of Florida dragonflies. I. Ent. News 45(8): 214–216.

Calvert, P. P. 1934. The rates of growth, larval development and seasonal distribution of dragonflies of the genus *Anax*. Proc. Amer. Philos. Soc. 73(1): 1–69.

Davis, W. T. 1914. The dragonfly *Anax longipes* on Long Island, N. Y. Bull. Brook. Ent. Soc. 9(2): 34–37.

Davis, E. M. and J. A. Fluno. 1938. Odonata at Winter Park, Florida. Ent. News 49(2): 44–47.

Gray, G. M. 1937. The large green dragonfly *Anax longipes* in the Woods Hole Region. Bull. Brook. Ent. Soc. 32(3): 122–124.

Hine, J. S. 1913. A note on *Anax longipes* Hagen. Ohio Nat. 14: 219.

Westfall, M. J. 1952. Additions to the list of dragonflies of Mississippi. Ent. News 63(8): 200–203.

Wright, M. 1939. Additions to the list of anisopterous dragonflies of the Central Gulf Coast Region. Jour. Tenn. Acad. Sci. 14(2): 203–208.

Collection Records of Some Arizona Mosquitoes (Diptera: Culicidae)

By Daniel R. Murphy, Arizona Desert Trailside Museum,
Tucson, Arizona

Mosquitoes are constantly becoming more important to public health because of the increasing number of diseases known to be transmitted by them. When attacking this problem in a given region one must first ascertain which species occur in the area. Although huge sections of Arizona have been entirely neglected, collection records are available for a few superficially investigated localities. The present paper records the distributional data of the mosquitoes in the principal insect collections in the state. This list is offered as a base upon which to build and should stimulate further work on the mosquitoes of Arizona.

Thanks are due Major Carl R. Bruck, Sixth Army Area Medical Laboratory, Fort Baker, California and Mr. Edward L. Breazeale, Assistant Agricultural Chemist, University of Arizona, Tucson, Arizona for first interesting the author in this project. The late Dr. L. P. Wehrle of the University of Arizona gathered together, over a period of twenty years, most of the mosquito specimens in the collection of the University. His keen interest in the insects of Arizona and recognition of the great importance of this group accounts for approximately 78% of the specimens recorded in the present list. Dr. Alan Stone, United States National Museum, is acknowledged for his determinations on most of the material. The author is grateful to Mr. O. L. Barnes, Miss K. Bartlett, Dr. L. A. Carruth, Mr. F. C. Deaver, and Dr. D. C. Lowrie for permission to examine the various collections.

Scheme of the present list:

The mosquito tribes and genera are arranged according to the system used by Matheson;[1] the species are placed alpabetically within their respective genera. The collections for each species are arranged alphabetically by localities. Collections for each locality are listed by dates of collection beginning with those collected in January and working on through December; no arrangement by years has been attempted because the material is too scanty. Following the date of collection is the number and stage of development of the specimens at hand; this is followed by the collector, the person responsible for the determination,[2] and lastly the collection in which the specimen is housed.[3]

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[1] Matheson, Robert—"Handbook of Mosquitoes of North America"—1940.

A list of abbreviations used will be found below.

Abbreviations:

Collectors

aan	A. A. Nichols	ls	Louis Schellbach
cc	C. Calhoun	ob	O. Bryant
ctv	C. T. Vorhies	raf	R. A. Flock
egd	E. G. Davis	rbs	R. B. Streets
ewg	E. W. Gurnett	rh	R. Hobbs
fcj	F. C. Jones	rsb	R. S. Beal
fww	F. W. Williams	slg	S. L. Green
gwm	G. W. Marx	tb	J. R. de la Torre-Bueno
hbh	H. B. Harding	tkr	T. K. Ryan
lpw	L. P. Wehrle	wn	W. Noon

Determinations

(THGA)	T. H. G. Aitken	(LPW)	L. P. Wehrle

Collections

(B)	Barnes, U. S. D. A., Tempe, Arizona
(DM)	Daniel R. Murphy, Tucson, Arizona
(FSC)	Arizona State College, Flagstaff, Arizona
(GC)	Grand Canyon National Park, Arizona
(MNA)	Museum of Northern Arizona, Flagstaff, Arizona

The specimens in the collection of the University of Arizona make up the bulk of the list and to avoid unnecessary repetition are not marked.

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[2] Most of the determinations were made or checked by Dr. Alan Stone of the United States National Museum; to avoid unnecessary repetition indication of the determiner will be found only on those specimens not determined by Dr. Stone.

[3] Since most of the specimens in the present paper are in the collection of the University of Arizona only those specimens housed in other collections have the collection indicated.

Miscellaneous

A	adult(s)
L	larva(e)
LR	collected as larva and reared
P	pupa(e)
PR	collected as pupa and reared
R	reared specimens, collection stage unknown
spm	specimen(s)

Dates of Collection

Roman numerals indicate months; arabic numerals indicate days of the month and years.

Genus Anopheles Meigen

Anopheles franciscanus McCracken, Ent. News 15: 12. 1904.

Arivaca VI–17–34, 1 spm, lpw; Nogales VI–8–39, 3 spm, wn; Ruby VII–10–38, 3 LR spm, gwm; Santa Catalina Mountains (Bear Canyon) X–25–38, 7 LR spm. lpw; XI–8–34, 9 R spm, lpw; XI–10–36, 2 R spm, lpw; XI–25–34, 7 LR spm, lpw; Tucson III–35, 1 L spm, tb; IV–22–33, 1 spm, lpw; VI–7–21, 2 spm, aan; VI–7–32, 1 spm, lpw.

Anopheles pseudopunctipennis Theobald, Mon. Culic. 2: 305. 1901.

Nogales VI–8–39, 5 spm, wn; Tempe I–30–34, 1 spm, egd (B); XII–20–33, 1 spm, egd (B); XII–22–34, 1 spm, egd (B); XII–26–33, 1 spm, egd (B).

Anopheles quadrimaculatus Say, in Keating, Narr. Exp. St. Peter's River 2: 356. 1824.

Arivaca VI–17–34, 4 R spm, lpw; VI–26–33, 1 spm, egd (B); VII–4–33, 1 spm, egd (B).

Genus Aedes Meigen

Aedes aegypti (Linnaeus), Hass. Pal. Reise: 470. 1762.

Tucson I–8–42, 10 R spm, ctv;[4] I–12–42, 5 LR spm, ctv;[4] I–17–42, 3 LR spm, ctv;[4] II–4–42, 3 LR spm, ctv;[4] II–27–38, 1 spm, hbh; III–2–38, 1 spm, lpw; III–4–38, 2 spm, hbh; III–26–36, 1 spm, lpw; VIII–17–35, 1 spm, lpw; IX–3–36, 1 spm, lpw; IX–8–35, 1 spm, lpw; IX–10–36, 1 spm, lpw; IX–22–36, 1 spm, lpw; X–1–36, 1 spm, lpw; X–4–31, 1 spm, lpw; X–7–39, 1 spm, lpw; X–12–31, 1 spm, lpw; X–13–36, 1 spm, lpw; X–15–41, 1 spm, lpw; X–18–40, 1 spm, lpw; X–21–43, 1 spm, lpw; X–26–34, 1 spm, lpw; X–30–31, 1 spm, lpw (B); X–39, 5 spm, fww; XI–3–31, 1 spm, lpw; XI–6–41, 1 spm, lpw; XII–26–41, 2 R spm, lpw; XII–31–36, 1 spm, lpw.

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[4] These specimens were collected as larvae and pupae in a bowl of water containing sweet potato plants in the house.

Aedes purpureipes Aitken, Pan-Pacific Ent. 17: 82. 1941.

TUCSON VII–27–32, 1 spm, lpw.

Aedes varipalpus (Coquillett), Can. Ent. 34: 292. 1902.

CHIRICAHUA MOUNTAINS VI–17–37, 1 spm, rsb; MOUNT GRAHAM VII–4–40, 1 spm, slg; SANTA RITA MOUNTAINS X–20–40, 1 spm, raf.

Aedes vexans (Meigen), Syst. Beschr. Zweifl. Ins. 6: 241. 1820.

SOMERTON VI–8–39, 4 spm, lpw; VIII–8–39, 1 spm, lpw; VIII–20–38, 7 spm, lpw; TUCSON VI–7–37, 3 spm, tkr; YUMA X–24–40, 1 spm, lpw.

Aedes sp.

YUMA VI–5–41, 1 spm, lpw.

Genus CULEX Linnaeus

Culex apicalis Adams, Kans. Univ. Sci. Bull. 2: 26. 1903.

SANTA CATALINA MOUNTAINS III–27–30, 1 spm, lpw; (Sabino Canyon) III–14–33, 1 spm, egd (B); IV–14–33, 1 spm, egd (B); TUCSON IV–14–33, 1 spm, egd (B).

Culex arizonensis Bohart, Ann. Ent. Soc. Amer. 41 (3): 341. 1948.

SANTA CATALINA MOUNTAINS XI–8–34, 1 R spm, lpw.

Culex coronata Dyar & Knab, Jour. N. Y. Ent. Soc. 14: 215. 1906.

ARIVACA VI–17–34, 1 R spm, lpw; SANTA CATALINA MOUNTAINS III–27–30, 1 R spm, lpw.

Culex quinquefasciatus Say, Jour. Acad. Nat. Sci. Phil. 3: 10. 1823.

ARIVACA VI–17–34, 1 R spm, lpw; TEMPE I–30–34, 1 spm, egd (B); I–31–34, 1 spm, egd (B); II–6–34, 1 spm, egd (B); II–12–34, 1 spm, egd (B); IV–14–33, 1 spm, egd (B); XII–

18–33, 1 spm, egd (B); XII–19–33, 1 spm, egd (B); TUCSON II–9–41, 1 spm, raf; II–13–41, 1 spm, raf; V–2–42, 1 spm, lpw; V–15–40, 1 R spm, aan; V–30–31, 1 spm, lpw; VI–8–31, 9 R spm, lpw;[5] VI–9–31, 9 R spm, lpw;[5] VI–10–31, 19 R spm, lpw;[5] VI–11–31, 8 R spm, lpw;[5] VI–12–31, 18 R spm, lpw;[5] VI–17–42, 1 spm, lpw; VI–18–41, 2 spm, lpw; VI–21–44, 1 spm, fcj; VII–1–20, 4 spm; VIII–8–51, 5 spm, rh (DM); VIII–16–35, 1 spm, lpw; VIII–19–35, 2 spm, lpw; VIII–35, 2 spm, lpw; IX–35, 2 R spm, lpw; X–4–44, 2 spm, ewg; X–17–31, 1 spm, lpw; X–18–31, 2 spm, lpw; X–22–33, 1 spm, lpw.

Culex stigmatosoma Dyar, Proc. U. S. Nat. Mus. 32: 123. 1907.

NOGALES VII–15–40, 3 spm, (THGA) lpw; TUCSON II–9–41, 1 spm, raf; VII–1–20, 2 spm; IX–35, 2 R spm, lpw; X–2–34, 1 spm, cc.

Culex tarsalis Coquillett, Can. Ent. 28: 43. 1896.

ARIVACA III–21–33, 1 R spm, lpw; VI–17–34, 1 spm, lpw; BENSON IV–15–41, 1 spm, raf; FLAGSTAFF VIII–23–43, 1 spm, rsb (FSC); TEMPE I–31–34, 1 spm, egd (B); II–6–33, 1 spm, egd (B); II–12–33, 1 spm, egd (B); IV–19–33, 1 spm, egd (B); XI–14–33, 1 spm, egd (B); TUCSON I–24–31, 1 spm, lpw; III–22–43, 1 spm, lpw; IV–16–42, 1 P spm, lpw; VI–17–33, 1 spm, lpw; VII–1–20, 1 spm.

Culex spp.

NOGALES VI–8–39, 2 R spm, (LPW) wn; TEMPE II–9–34, 2 spm, egd (B); TUCSON III–35, 6 L spm & 2 P spm, tb; V–24–32, 6 L spm & 65 A spm, ctv.[6]

Genus CULISETA Felt

Culiseta impatiens (Walker), List Dipt. British Mus. 1: 5. 1848.

FLAGSTAFF VII–6–49, 4 spm, (MNA).

Culiseta incidens (Thomson), Kongl. Sven. Eug. Resa, 6 Dipt.: 433. 1868.

FLAGSTAFF VII–5–49, 2 A spm & 17 L spm, (MNA); VII–6–49, 4 spm, (MNA); GRAND CANYON (North Rim) VII–10–38, 1 spm, ls (GC); VII–11–38, 1 spm, ls (GC); (Grand

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[5] These specimens were all reared by Dr. L. P. Wehrle and probably represent one collection with dates of emergence.

[6] Dr. Alan Stone states that these are probably *Culex tarsalis* Coquillett; the larvae are very small and the adults are badly rubbed.

Canyon Village) VIII–29–46, 1 spm, Sturm (GC); IX–14–46, 1 spm, Sturm (GC); NOGALES V–39, 1 spm, gwm; PRESCOTT VII–19–46, 2 spm, rsb (FSC); SANTA CATALINA MOUNTAINS I–5–35, 4 spm, ob; III–4–30, 6 R spm, lpw; III–15–30, 1 R spm, lpw; SANTA RITA MOUNTAINS VII–1–36, 2 spm, raf; TEMPE I–20–34, 1 spm, egd (B); II–6–34, 1 spm, egd (B); IV–14–33, 1 spm, egd (B); TUCSON I–5–35, 2 spm, lpw; I–7–47, 1 spm, lpw; II–13–41, 3 spm, raf; II–26–40, 1 spm, lpw; III–17–17, 2 spm; IV–16–42, 2 PR spm, lpw; V–15–40, 2 R spm, aan; VII–1–20, 2 spm; XII–13–41, 1 spm, lpw; WHITE MOUNTAINS VII–28–26, 1 spm, rbs.

Culiseta inornata (Williston), U. S. D. A. Div. Ornith. & Mam., N. Amer. Fauna 7: 253. 1893.

ARIVACA III–21–33, 7 R spm, lpw; III–24–33, 1 spm, lpw; SANTA CATALINA MOUNTAINS (Bear Canyon) III–18–39, 1 spm, tb; TEMPE XII–13–33, 8 spm, egd (B); TUCSON VII–1–20, 1 spm; XII–21–46, 1 spm, lpw.

Culiseta melanura (Coquillett), Jour. N. Y. Ent. Soc. 10: 193. 1902.

TEMPE II–9–34, 8 spm, egd (B).

Culiseta sp.

TUCSON III–35, 2 P spm, tb.

Genus PSOROPHORA Robineau-Desvoidy

Psorophora confinnis (Lynch Arribalzaga), Rev. Mus. de la Plata 2: 149. 1891.

TUCSON VIII–10–36, 1 spm, lpw; IX–34, 1 spm, lpw.

Psorophora signipennis (Coquillett), Proc. Ent. Soc. Wash. 6: 167. 1904.

TUCSON VIII–6–36, 1 spm, lpw; IX–11–38, 1 spm. lpw.

Notes and News in Entomology

Under this heading we present, from time to time, notes, news, and comments. Contributions from readers are earnestly solicited and will be acknowledged when used.

A Monograph of the Orthoptera of North America

The National Science Foundation has made a grant to JAMES A. G. REHN, Curator of Insects of the Academy of Natural

Sciences of Philadelphia, as the Principal Investigator, in support of the preparation of a monograph of the Orthoptera of North America. The grant covers a period of two years. This project has for a number of years been the chief long-range objective of the Department of Insects of the Academy, and toward it were directed the many seasons of field work of the recipient and his long-time colleague, the late Morgan Hebard. One half of Mr. Rehn's official time is to be allotted to the North American monograph, while the other half is assigned to his study of similar type on the Acridoidea of Australia, being prepared for and published by the Commonwealth Scientific and Industrial Research Organization of Australia, two volumes of which have already appeared. Direct preparatory work on the North American study will occupy approximately the first half year, which will be followed by the critical study of the acridoids. It is estimated completion of the work as outlined will require between eight and ten years.

The Nabours Collection of Genetic Material of the Tetrigidae (Orthoptera)

The Academy of Natural Sciences of Philadelphia has received as a gift the very extensive and important genetic material which resulted from the long-continued breeding experiments with grouse-locusts (Tetrigidae), carried on through a number of decades by Dr. Robert K. Nabours, Emeritus Professor of Zoology at Kansas State College at Manhattan, Kansas. This material formed the concrete evidence on which were based numerous outstanding contributions by Dr. Nabours and his associates on the inheritance of color pattern in these interesting grasshoppers, and constitutes the greatest set of controlled genetic breedings ever carried out with Orthoptera, and from these experiments entomology, broad biology and genetics per se have drawn important evidence and conclusions.

The Nabours series is preserved in sealed vials of alcohol, all data fully noted both in the vial and in accompanying records.

The number of individual vials, each containing a specific and recorded mating progeny, is in excess of 40,000, and that of individual specimens in the same between 460,000 and 500,000. —JAMES A. G. REHN.

Current Entomological Literature

Compiled by **VENIA T. PHILLIPS**, Librarian

Academy of Natural Sciences of Philadelphia

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania pertaining to entomology, including all arthropods except Crustacea. Coverage will be world-wide as regards major contributions to systematics as well as for all papers on morphology, physiology, embryology, etc. In addition, for species from the Americas and the Pacific (Nearctic, Neotropical and Polynesian regions) all minor contributions to taxonomy, distribution, etc., will also be recorded.

This list gives references of the year 1953 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

GENERAL—Beier, M.—Miozäne und aligozäne Insekten aus Österreich und den unmittelbar angrenzenden Gebieten. [Sitzungsberichte, Abt. 1, Österreich. Akad. Wissen.] 161: 129–34, ill., 1952. **Blickenstaff, C. C., K. D. Arbuthnot and H. M. Harris.**—Parasites of the European corn borer in Iowa. [73] 27: 335–79. **Bourgogne, J.**—Considérations théoriques et pratiques sur l'emploi de la lumière pour la chasse aux insectes. [119] 14: 60–64. **Forbes, W. T. M.**—Note on multimodal curves (Myrmecia). [52] 46: 221–24. **Hennig, W.**—Kritische bemerkungen zum phylogenetischen System der Insekten. [28] 3, sonderheft: 1–86, ill. **Ives, J. D.**—Tepee technique for collecting cave flies. [147] 28: 240–41, ill. **Judd, W. W.**—A study of the population of insects emerging as adults from the Dundas Marsh, Hamilton, Ontario, during 1948. [12] 49: 801–23, ill. **Kevan, D. K. M.**—A method of mounting genitalia, etc. for incorporation into collections of pinned insects. [Ent. Record] 64: 195–97, 1952. **Kitchen, W. H. and D. Gall.**—A controlled humidifier for insect breeding rooms. [40] 44: 367–69, ill. **Klock, J. W. and W. L. Bidlingmayer.**—An adult mosquito sampler. [92] 13: 157–58, ill. **Kusnezov, N.**—Las formas de vida especializadas y su desarrollo en diferentes partes del mundo (Formicidae). [48] 4: 85–102. **Schwenke, W.**—Biozönotik und angewandte Entomologie. (Ein Beitrag zur Klärung der Situation der Biozöbotik und zur Schaffung einer biozönotischen Entomologie.) [28] 3, sonderheft: 86–162. **Sellers, W. F.**—A critique on the time factor in biological control. [40] 44: 273–89. **Sevastopulo, D. G.**—The handling of "papered" insects. [Ent. Record] 65: 197–99. **Smith, P. S.**—Wind currents and flying insects. [Ent. Record] 64: 49–50, 1952. **Tonks, N. V.**—Annotated list of insects and mites collected on brambles in the lower Fraser Valley, British Columbia, 1951. [53] 49: 27–9.

BIOGRAPHIES, OBITUARIES—Hyslop, James Augustus, 1884–1953.—Obituary notice with biography and portrait, by Helen Sollers, Fred C. Bishop and M. D. Leonard. [56] 55: 153–56. **Naufock, Rudolf,** 1880–1952.—Nachruf by K. Mecenovic. [Zeit. Wiener Ent. Ges.] 37: 208, 1952. **Pittioni, Bruno,** 1906–1952.—Obituary notice signed R. [Zeit. Wiener Ent. Ges.] 37: 186, 1952. **Riley, William Albert.**—Short biography, with port. [80] 39: 465–66. **Sachtleben, Hans,** 1893– . Hans Sachtleben zum 60. Geburtstage, port. [28] 3, sonderheft: i–ii. **Singh, Sardar Mohan,** 1910–1952. Obituary with port, signed M. V. V. [Indian Jour. Ent.] 15: 77–78.

ANATOMY, PHYSIOLOGY, MEDICAL—Allan, P. B. M.—On pupal activity. [Ent. Record] 64: 37–40, 1952. **Baker, W. K.**—V-type position effects of a gene in Drosophila virilis normally located in heterochromatin. [Genetics] 38: 328–44, ill. **Balogh, J. and G. Gere.**—Über die Ernährungsbiologie und Luftstickstoffbindung der Hyphantriaraupen. [Acta Biol., Budapest] 4: 431–52. **Blackith, R. E. and B. S. Gorringe.**—Responses of pests to fumigation. I. Toxicity of mercury vapour to the eggs of Calandra granaria (L.). [40] 44: 217–24. **Bradley, R. H. E. and D. W. Rideout.**—Comparative transmission of potato virus Y by four aphid species that infest potato. [44] 31: 333–41. **Butler, C. G. ed.**—The behaviour of social insects (Symposium). [Advancement of Sci.] 10: 17–30. **Carayon, J.**—Organe de Ribaga et fécondation chez un hémiptère cimicidé du Cambodge: Aphraniola orientalis Ferris et Usinger. [Rev. Franc. d'Ent.] 20: 139–46, ill. **Comfort, A.**

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ORTHOPTERA—Agarwala, S. B. D.—A comparative study of the ovipositor in the Acrididae, II. [Indian Jour. Ent.] 15: 53–69, ill. **Burr, M.**—"Burnt" grasshoppers. [Ent. Record] 65: 224–25. **Ewer, D. W.**—The anatomy of the nervous system of the tree locust, Acanthacris ruficornis (Fab.). I. The adult metathorax. [Annals Natal Mus.] 12: 367–81, ill. **Hauke, H. A.**—An annotated list of the Orthoptera of Nebraska. Part II, The Tettigidae and Acrididae. [Bull. Nebraska Univ., State Museum] 3, no. 9, 79 pp. **Hoyle, G.**—(See Anatomy.) **Kevan, D. K. M.**—An unusual stridulatory mechanism in Xyronotus aztecus Sauss. (Acrididae). [60] 89: 169–70, ill. **Krzanowski, A.**—The number of segments forming the head of the cockroach Periplaneta orientalis L. [Ent. Mitt. Hamburg] 2: 57–75, ill. **Lu and Bodine.**—(See Anatomy.) **Okay, S.**—(See Anatomy.) **Palmer, C. B.**—Crickets, nature's expert fiddlers. [Nat. Geogr. Mag.] 104: 385–94, ill. **Sacktor and others.**—(See Anatomy.) **Smart, J.**—A note of the wing-venation of Dissosteira carolina (Linn.) (Acridiidae). [156] 123: 203–5, ill. On the wing venation of Physemacris variolosa (Linn.) (Pneumoridae). [156] 123: 199–202, ill. The wing-venation of the migratory locust (Locusta migratoria Linn.) (Acridiidae). [156] 123: 207–17, ill.

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Reviews

ATLAS OF SCALE INSECTS OF NORTH AMERICA. Vol. VI, Pseudococcidae (Part II). By G. F. Ferris. Stanford University Press, Stanford, California, 1953. Pp. i–vi, 279–506, 85 full-page illustrations. Price, $7.50.

This concludes the Pseudococcids. The first four volumes dealt with the Daspididae; there still remain the smaller families that, it is planned, will be covered in two future volumes to complete the series. This work is too well known to require further comment.

In the introduction, the author states his reasons for omitting bibliographic references: "This work is intended to facilitate identification. The original descriptions of the vast majority of the species . . . are practically worthless for purposes of identification and have a historical value only in establishing authorship and priority. That being so, they are of interest and use only to the special student and the special student will have or should have ways of determining these facts. Why increase the expense of publishing this work by reciting them?"—R. G. S.

How to Know the Spiders. Pictured-keys for determining the more common spiders, with suggestions for collecting and studying them. By B. J. Kaston and Elizabeth Kaston. Pp. vi + 220, 552 figures. Wm. C. Brown Co., Dubuque, Iowa. Spiral binding, $2.25; cloth, $3.00.

Presents carefully prepared keys and excellent illustrations of our common spiders (40 families with 190 genera and 271 species) together with illustrations of their webs and snares. Each species is briefly characterized and is illustrated; its geographical distribution stated and something of its natural history revealed. —R. G. S.

Insects Close Up. A pictorial guide for the photographer and collector. By E. S. Ross. 80 pages, 125 illustrations, including eight in color. University of California Press, Berkeley and Los Angeles, Cal., 1953. Price, $1.50.

The author is intent on sharing his delight in the study of insects and in their photography. The pictures are large and have sharp detail; nearly all are of living, active insects, obtained with the use of Exakta VX and a Hasselblad cameras, and a Heiland Strobonar IA flash. Twelve orders of insects are represented including such rarities as an embiid within its silken tunnel, and a live male stylops mating with the female on a bee's abdomen. The last 20 pages, "Insects for Pleasure," give instruction on collecting and preserving, and on photographic methods and equipment.—R. G. S.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

American Sarcophagidae—wanted for identification. H. R. Dodge, P.O. Box 185, Chamblee, Georgia.

German lepidopterist wishes to correspond and receive live material (eggs and pupae) in exchange for dried imagoes. Johannes Reichel. Koenigsberg, Krs. Wetzlar 16, Germany.

For exchange—The periodic Cicada, T. septendecim. Desire Lepid., espec. Papil., Sphing. & Speyeria. Also Col., espec. Ceramb. & Lucan.

John W. Morris, 2704 Genesee St., Syracuse 9, N. Y.

Cynipid and Itonidid galls—American species wanted; purchase or exchange for British species. Fresh or dried. D. Leatherdale, F.R.E.S., Old Woodstock, Oxford, England.

Wanted—Reprints or papers concerning insects taken in Alaska for inclusion in list of Alaskan insects. R. H. Washburn, Alaska Experiment Station, Palmer, Alaska.

Conopidae of the World wanted. Will pay 10¢ to $1.00 for pinned and labelled specimens. S. Camras, 4407 N. Milwaukee Ave., Chicago 30, Illinois.

Anisoptera—Nearctic sp. wanted for exchange, espec. Ophiog., Arigom., Aeschna, Neurocor., Somatoc., Cordulia, Dorocor., Leucor. R. D. Cuyler, N. C. State College, Raleigh, N. C.

Bembicini and Stizini (Hym., Sphec.) of New World wanted for revis. study. Will return upon request or at end of project. James E. Gillaspy, Dept. of Zoology, Univ. Texas, Austin 12, Texas.

Agapema galbina. Will exchange cocoons of this moth for nature books. E. Frizzell, Route 4, Box 96, San Benito, Texas.

Wanted—Data on exact location of colonies of *Epibembex* (olim *Bembix*) (Hymenoptera), any species, any part of country, for biological studies. Howard E. Evans, Dept. Entomology, Cornell Univ., Ithaca, N. Y.

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ENTOMOLOGICAL NEWS

Vol. LXIV DECEMBER, 1953 No. 10

Notes on the Zygaenid Genus Harrisina Packard, with Special Reference to Harrisina metallica Stretch

By Robert L. Langston and Owen J. Smith, University of California Citrus Experiment Station, Riverside

Forty-five species are listed for the genus *Harrisina* Packard, by Bryk (1936). The type localities of all of these are in the Western Hemisphere, the total number being about equally divided north and south of Panama. The reports of Armitage (1946) and of Ebeling (1950) that *Harrisina brillians* B. & McD. occurs in Italy and was probably introduced into eastern United States from Europe appear to be in error. European literature fails to list the genus *Harrisina* from that continent, and Grandi * does not know of the occurrence of *H. brillians* in Italy. Observations on this species throughout its known range indicate that it is indigenous to the mountains of the Sonoran and Chihuahuan deserts, and that it has not spread far therefrom.

The species of the genus *Harrisina* listed for the United States (McDunnough 1939) may be divided into two groups: the eastern group, *H. americana* (Guér.) and its two forms *texana* Stretch and *australis* Stretch, occurring from Texas to Florida and New York; and the southwestern group, *H. metallica* Stretch, *H. coracina* (Clem.), *H. brillians* B. & McD., *H. lustrans* (Beut.) *H. cyanea* B. & McD., and *H. aversus* Hy. Edw., occurring from Texas westward and, in part, southward into Mexico.

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* Correspondence, in 1952, with Professor Guido Grandi, Istituto di Entomologia della Universitá degli studi di Bologna, Bologna, Italy.

Harrisina brillians is much the most common of the southwestern group, its distribution apparently covering the range of all the other species and contacting the eastern group in Texas. With the exception of *H. cyanea,* which seems to have significant neurational differences, all the southwestern species are separated from *brillians* on more or less superficial characters of color and size. One of the apparently most distinct of this group is *H. metallica,* which has an orangish-red collar on the pronotum, as contrasted with the dark metallic blue of *brillians.*

The validity of specific status for *H. metallica* was first questioned by Cockerell (1897). He succeeded in obtaining eggs from a cross of a male of this "species" with a female of *H. coracina* and considered *metallica* to be a possible dimorphic form of *coracina.* It occurred to the authors that *metallica* might be a "red-collared" form of *brillians.* Data obtained from limited breeding experiments seem to confirm this opinion.

RESULTS OF BREEDING EXPERIMENTS

Among thousands of *H. brillians* moths that have emerged from larvae collected in California and Arizona, occasional *H. metallica* moths have appeared. Virgin moths of the two "species" were isolated, one pair to a cage. They were found to mate readily, producing viable eggs, and the offspring of each pair were reared separately.

Three different wild *H. brillians* females were crossed with *H. metallica* males and produced a combined total of 280 moths in the F_1 generation, all of which were *brillians.* A second generation was not obtained from this combination.

Two pairs of wild *H. brillians* males and *H. metallica* females were crossed and gave in the F_1 generation a total of 144 moths, again all *brillians.* A pair of these heterozygous *brillians* when mated produced 170 moths in an F_2 generation, of which 130 were *brillians* and 40 *metallica,* a ratio of 13 : 4 (approximately 3 : 1). The typical coloration of the two "species" was distinct with no evidence of integration. The sex ratios were not in significant variance from the normal 1 : 1 of *H. brillians.*

It thus appeared that the red collar (*metallica*) was a simple recessive Mendelian character. Unexpected results were obtained, however, from the progeny of a pair of wild *H. metallica.* Out of a total of 117 moths of an F_1 generation, 77 *metallica* and 40 *brillians* were obtained, a ratio of approximately 2 : 1. This indicates that either a multiple allele for red collar occurs, one dominant and one recessive to *brillians,* or that this experiment was accidentally contaminated with *H. brillians* larvae.

The genetics of the two "species" was not pursued beyond this point. Their extreme closeness, however, is obvious. Furthermore, no difference was observed between the larvae of *H. brillians* and *H. metallica.*

Population breeding of wild stock of *H. brillians* failed to produce a single *H. metallica* in 3,233 offspring. This indicates that a near-pure strain of *brillians* exists, at least in some areas. Moths emerging from field-collected larvae also showed *metallica* to be rare in most areas, in a ratio about 1 : 1500. In certain restricted locations the proportion was as high as 1 : 25, however, and field observations at Phoenix, Arizona, indicated that *H. metallica* might be predominant.

The wide range in size and color observed in *Harrisina brillians* moths is, in our opinion, sufficient to cover the characters used to separate most of the other species of *Harrisina* of the southwestern group. A comprehensive genetic study would undoubtedly clarify the confused taxonomy of the genus *Harrisina.*

LITERATURE CITED

ARMITAGE, H. M. 1946. The grapeleaf skeletonizer in California. Blue Anchor 23(2) : p. 25.

BRYK, F. 1936. In Lepidopterorum Catalogus, pars 71 : 297–301.

COCKERELL, T. D. A. 1897. Note on *Harrisina coracina.* Psyche 8 (257) : p. 120.

EBELING, W. 1950. Subtropical entomology (p. 574). Lithotype Process Co., San Francisco, Calif.

McDUNNOUGH, J. 1939. A check list of Lepidoptera of Canada and the United States of America. Part II. Microlepidoptera. Southern California Acad. Sci. Memoirs 2: p. 7.

Arctic Alaskan Hymenoptera and Coleoptera

By Neal A. Weber, Swarthmore College,
Swarthmore, Pennsylvania

The following records of Hymenoptera and Coleoptera are in addition to those reported previously (Weber, 1950). They were taken mostly in 1950 during field work supported by the Office of Naval Research and the Arctic Institute of North America. All are from the Arctic slope of the Brooks Range north to the Arctic Ocean.[1] The Tenthredinidae were identified by Dr. R. B. Benson, the Ichneumonidae by Dr. J. F. Perkins, the Apidae by Dr. O. W. Richards, the Carabidae and several Staphylinidae by Dr. E. B. Britton and the Dytiscidae by Dr. J. Balfour-Browne, all through the courtesy of the British Museum (Natural History); other Coleoptera identifications are credited by name.

Order Hymenoptera

Tenthredinidae

Nematus (Pteronidea) reticulatus Holmgren: Pt. Barrow, July 12–14, 1950. Females taken on undisturbed tundra southeast of village in clear, breezy, 50° F. weather and at inlet seven miles south of village near Eskimo tents in overcast, windy, 40° F. weather. This species occurs on mountain tops in Scotland.

Nematus (Pteronidea) sp.: Ikakevik Lake.

Nematus (Pachynematus) clibrichellus Cameron (= *pubescens* Marlatt): Pt. Barrow, July 12–15, 1950. Males and females taken in tundra 5–8 miles south of village in breezy to windy, overcast, 40° F. weather and again under sunnier but cool conditions. A species occurring also on mountain tops in Scotland.

Amauronematus sp.: Noluk Lake.

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[1] The data for Noluk Lake are latitude 68° 47′ N., longitude 160° 0′ W., July 6–7, 1950, elevation 2200–2800 feet above sea level; data for Ikakevik Lake are: latitude 68° 30′ N., longitude 157° 08′ W., July 6, 1950, elevation 2000 feet; data for Oumalik: latitude 69° 59′ N., longitude 156° 0′ W., July 15, 1949.

Ichneumonidae

Mesoleius sp. A: Pt. Barrow, July 12, 40° F., sky overcast, windy, near Eskimo tent and July 15, 1950 on tundra 5–8 miles back from coast.

Mesoleius sp. B: Noluk Lake.

Mesoleius (Spudaeus Thoms) sp. A: Noluk Lake.

Mesoleius (Spudaeus Thoms) sp. B: Noluk Lake.

Syndipnus sp.: Noluk Lake.

Helictes sp.: Umiat, July 27, 1950, on Colville river bottom. A genus parasitic on Diptera.

Orthocentrini—?**Neurateles** sp.—Alaska: Umiat, July 25, 1950, on the Colville river bottom (D.T.). A genus parasitic on Diptera as was *Atractodes* and *Stenomacrus* of Weber, 1950.

According to Dr. Perkins the *Mesoleius* and *Syndipnus* species were probably parasitic on Tenthredinidae larvae as was the *Aptesis* of Weber, 1950.

Formicidae

Formica fusca L.—Under the name of *Formica rubra* what is probably this ant was recorded by Parry, 1826, in the account of his third voyage to Arctic America as follows: "Abundant at the Whale-fish Islands; it was also found, on the preceding voyage, on several parts of the Melville Peninsula." As stated in Weber, 1950, it will probably be found in Arctic Alaska and has already been taken at the mouth of the Mackenzie River in Canada. The record of *Myrmica rubra* (?) (*loc. cit.*) should be deleted.

Vespidae

Vespula (Dolichovespula) norwegica albida (Sladen). Identified under this name in Weber, 1949, p. 128, the species was inadvertently referred to under the generic name *Vespa* in 1950. It has since been identified by Dr. Richards as *Dolichovespula norwegica marginata*, the latter a preoccupied name, from specimens from Umiat, July 25, 1950. Also on this day here, four species of *Bombus* were collected. The reference to this wasp (Weber, 1950, p. 189) having a nest with several cells containing honey erroneously implied that the wasps produced honey. Only *Bombus* in this area could have produced the honey, if honey it was. The nest was brought to me in a partially crushed condition by Eskimos and, while a typical wasp nest of paper cells, it did have several cells containing a liquid. Unfortunately it was not retained and the honey diagnosis had best be discarded.

Apidae

Bombus alboanalis Franklin: Umiat, July 24, 1950. Taken on the crest of the Colville valley several hundred feet above the river at a temperature of 70° F.

Bombus bifarius Cress. var. *vancouverensis* Cress.: Umiat, July 25, 1950. Bumblebees of four species (including also *sylvicola, moderatus* and *kirbyellus*) were numerous in the lush vegetation about the ponds on the Colville valley floor.

Bombus kirbyellus (Curtis)—Alaska: Umiat, July 25–27, 1950. Ikakevik Lake; Noluk Lake. Considered by Dr. Richards a subspecies of *balteatus* Dahlb. See *vancouverensis.* This large *Bombus,* which appeared to be a variety with black tail and tergites 3–6 black haired (Richards), was captured as it was entering a *Citellus parryi* burrow at 2,500 feet elevation. At Ikakevik Lake the species occurred on a meadow near the lake covered with flowers at this time (dandelions, lupines, Stellaria, etc.).

Bombus moderatus Cress.: Umiat, July 25, 1950. See *vancouverensis.*

Bombus strenuus Cress.: Umiat, July 27, 1950.

Bombus sylvicola Kirby: Umiat, July 24–25, 1951. See *van couverensis.* Taken also at Umiat on the crest of the valley several hundred feet above the valley floor at a temperature of 70° F.

ORDER COLEOPTERA

Carabidae

Nebria nivalis Paykull: Ikakevik Lake. This carabid was taken at noon of a sunny day at the shore of this small, hitherto unnamed lake near Ikakevik Mountain.

The species is known from the high mountains of Scotland and from Sweden, Finland and North Russia. Lindroth in his monograph of Fennoscandian Carabidae (1949) has much to say about this unusually interesting species. "Die einzige ausschliesslich in der *Regio Alpina* heimische Art ist *Nebria nivalis*" (p. 448) and in experiments (p. 465) it is shown to have the greatest cold tolerance of any carabid tested. He doubts, however, that my specimen is this species.

Pterostichus pinquedineum Esch. Noluk Lake. From summit of 2,800 foot mountain (600 feet above lake) among low tundra vegetation of dryish type.

Dytiscidae

Agabus sp. not in Brit. Mus.: Pt. Barrow, July 3, 1950.

Colymbetes dolabratus Payk.: Umiat, July 5, 1950, in pond on Colville valley floor.

Illybius sp. not in Brit. Mus.: Umiat, July 6, 1950, in pond on Colville valley floor.

Tlybius angustior of Weber, 1950 should be *Illybius angustior.*

Silphidae

Thanatophilus lapponica Hbst. (det. Arnett). Larvae were taken as late as August 30 at Anaktuvuk at a temperature of 30° F., snow having fallen in the night and morning. A large black larva was here taken, with many whitish mites attached to the venter, which did not seem to be hibernating although soft and pliable. Rather it appeared to be moribund since by the next day it was clearly dead. The habitat of this species and *trituberculata* appears to be similar. Also, Noluk Lake, from carcass of young female caribou dying several days earlier.

Staphylinidae

Arpedium n. sp.?: Ikakevik Lake, near shore.

Atanygnathus *sp.* (det. Blackwelder): Oumalik, from debris at base of *Salix glauca* var. *acutifolia* (Hook.) (det. Ball).

Micralymna sp. (det. Blackwelder): Pt. Barrow, July 14, 1949, from grasses, sedges, lichens, etc., much chewed by lemmings.

Tachinus n. sp.?: Noluk Lake.

Aleocharinae

Genus ? (det. Blackwelder): Anaktuvuk Pass, July 9, 1949, from slight rise or nunatak in middle of valley floor in dryish debris.

Chrysomelidae

Chrysolina n. sp. (det. H. S. Barber): Anaktuvuk Pass, August 28, 1948. Unfortunately Mr. Barber died before this was described.

Chrysomela subsulcata Mann (det. Bryan): Noluk Lake. Several specimens of variable size. The Pt. Barrow specimens of Weber, 1950, were also variable in size and iridescence. They were only found by patient searching July 3 and 4 while a cold wind blew from the polar ice. The insects moved sluggishly or remained immobile amongst the low, dryish tundra vegetation consisting mostly of lichens, short sedges and grasses. Their bronze elytra reflected sunlight or they would have been particularly hard to see in the vari-colored carpet of vegetation.

LITERATURE CITED

WEBER, N. A. 1949. Late summer invertebrates, mostly insect, of the Arctic Alaskan slope. ENT. NEWS 50: 118-128.

——. 1950. A survey of the insects and related arthropods of Arctic Alaska. Part I. Trans. Amer. Ent. Soc. 76: 147-206.

A Change of Names in the Cerambycidae, with other Notes

By LAWRENCE S. DILLON and ELIZABETH S. DILLON
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As *Lamia spinosa* Say (1827) is a primary homonym of *Lamia spinosa* Drury (1773), it is essential that a new name be found for this common species of the genus *Dectes*. Since both *D. brevis* Casey and *D. texanus* LeConte are valid species, no synonyms are available for use. Hence the authors propose that the form in question be known as **Dectes sayi** Dillon and Dillon, nom. nov.

While the authors were studying over some Indo-Australian longhorns, it became apparent that the two specimens on which the description of *Mengelotes ambiguus* D. and D. had been based were mislabelled as coming from Mexico. *Mengelotes* D. and D. is a synonym of *Diochares,* and *ambiguus* is identical to *D. ambigenus* Chevrolat from the Philippine Islands.

Saperda vestita Say (1827), now placed in the genus *Eupogonius,* is a primary homonym of *Saperda vestita* Say (1824), and must be renamed, as LeConte suggested more than one hundred years ago (see Journ. Acad. Nat. Sci. Philadelphia

(2) II, 1852, p. 159). For the present the species may be called *Eupogonius pauper* LeConte, which name is currently listed as a synonym of the form under discussion. However, there appears to be considerable evidence supporting *E. pauper* as valid in its own right, in which case a new name will have to be applied here. Other names, according to Knull (Ohio Biol. Surv. Bull. xxxix, 1946, p. 264), that might be available here are *E. fulvovestitus* Schaef. and *E. fraxini* Knull, the ultimate solution depending on a revisional study of the genus.

Dr. Carl Börner (1880–1953)

Because he was a figure of world-wide importance, it is fitting that a brief notice be published in an American entomological journal of the death of Dr. Carl Börner, it being assumed that a definitive account of his life and work will be published in Germany.

Dr. Börner was born in Bremen, May 28, 1880, and died June 14, 1953, in Naumburg/Saale (Russian Zone), Germany. During most of his life he was director of the Imperial Biological Institution's stations for research on the grape Phylloxera, first at Villers l'Orme-Metz, and later at the new center that he established at Naumburg. He came to recognize a number of "biotypes" or races of Phylloxera, grew and hybridized many varieties of grapes, studied the intricate problems of host-parasite relationship and the inheritance of resistance and of immunity. Using the American species, *Vitis cinerea,* he finally developed varieties immune to all nine biological races of Phylloxera.

Older entomologists will recall Dr. Börner's monumental work on the Chermes, published in 1908, and his subsequent papers on this group, now known as Adelgidae; they will recall also his many contributions on the grape Phylloxera (Die Reblaus), a species that he studied and published on over a period of forty years. Aphid workers will, of course, remember him for his many fine contributions in their particular field, that is, if they happen to have access to his papers, some of which were privately published and appear to have had a limited circulation. They will perhaps long remember him, and cause him unrest, for the paper in which he described seventy-five new species on four pages of text. It is likely that Dr. Börner will be best remembered for his contribution of a new system of generic classification in the Aphidae, for the numerous genera that he described in this group, and for over 200 new species that he described. All will be pleased that he lived to see his "Europae centralis Aphides" (Die Blattläuse Mitteleuropas), a work of 484 pages, in print.

Few Americans will be aware of the fact that Dr. Börner also published in the field of botany. In 1912, there appeared his "Volksflora Deutschlands," much in demand at the time; in 1923 he published his "Tokontologie," in which he attempted to establish a theoretical basis for a natural system, particularly of the plant kingdom, based on the types of alternation of generations and reproductive phenomena rather than on morphology.

Nor was Dr. Börner's interest limited to the fields just enumerated. He published on insect anatomy and morphology, insect phylogeny, on the Collembola and Lepidoptera. Few, if any, will be aware of the fact that he also wrote poetry; only his family and intimate friends will know of his interest in music.

The writer never met Dr. Börner, and much to his regret only started to correspond with him in 1948, although attempts were made to do so earlier. He found him very generous and helpful.

F. C. Hottes,
Grand Junction, Colorado

Notes and News in Entomology

Under this heading we present, from time to time, notes, news, and comments. Contributions from readers are earnestly solicited and will be acknowledged when used.

More about Bees' Dances for Directing the Swarm

In 1951, Martin Lindauer[1] showed for the first time that bees use their remarkable "language"[2] not only for giving the location of nectar but also for directing a swarm to a new nesting site or future home. This year,[3] after another season's work, using more controlled conditions (artificially made up swarms placed at convenient eye-level, and a locale where there were no natural nesting sites available), Lindauer has been able to demonstrate that bees can discriminate between more and less desirable prospective homes and that even when several sites are discovered they are able to select the best of these. He has learned how the bees attain agreement as regards the best site, how the cluster is finally broken up, and how the flight to the new home is directed and completed. Some of this work will be described here.

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[1] See Ent. News 63: 100–02, April, 1952.

[2] See Ent. News 58: 152–54, June, 1947.

In the first experiment, two empty possible nesting sites were set up: "A," a light box hive 10 meters distant under a tree and covered with some brush, and "B," a ruggedly constructed hive 75 m. distant and exposed on a tree stump. Both were soon discovered by scouts from the swarm. Within 4 hours, 37 such scouts were dancing on the swarm to promote the more sheltered site "A," and making repeated return visits to the site; for "B" there were only 3 dancers. Hive "B" was now placed on the ground beside the stump and dry brush was heaped about it to thoroughly ensconce it. The following day the number of bees frequenting "B" and dancing for it rapidly increased to 101, while site "A" gained only a few new adherents. On the third day there were again more new dancers for "B" while the dancers for "A" gradually gave up dancing entirely and made only infrequent visits back to their site. Four of the "A" dancers even became converted and danced for site "B." At 10:55 on this day, the decision having fallen to "B," the cluster broke up and flew to take possesison of the new home.

When given the choice between two straw skeps, one of which was perfumed with a few drops of melissa oil (thought by beekeepers to be attractive), a swarm showed preference for the odorless one. Exchanging the locations of the two skeps, the bees changed their dance to the new location of the odorless one.

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[3] Lindauer, M. 1953. Bienentänze in der Schwarmtraube (II). *Die Naturwissenschaften,* 40: 379–85.

As between this skep and a wooden hive the bees preferred the hive.

In one experiment with two empty hives, scout bees from a swarm were giving about equal attention to both (14 and 16 dancers respectively) when suddenly a single bee was seen to dance very vigorously for still a third location. Soon others were dancing in this very lively and excited fashion. Searching in the direction and at the distance indicated by the dance, Lindauer soon found a small hole in the ground, 3 mm. across, with about 50 bees excitedly going in and out. Within another hour there were many more dancers and the swarm reached its decision, broke up and flew to take possession of what proved to be a dry cavity, ½ m. underground, 20 cm. high, 30 cm. wide, 50 cm. deep, in a quiet sheltered corner of the woods, an ideal home indeed.

In the above case, it was the liveliness and vigor of the dance that encouraged more and more new bees to visit the underground site and that at the same time discouraged the dancers for the other site. Apparently the bees do not compare the several sites but are able to judge a site absolutely. A 1st Class site will evoke very brisk dances, a 2nd Class site a less vigorous response, and so on. Dancers for a lower grade site when meeting these lively dancers of a 1st Class site at first pay little heed but after several such encounters on the surface of the swarm they gradually give up their own dancing and their visits to their site also become less frequent. In one instance, after a fourth encounter, one bee was seen later to have adopted the new style of dance, i.e., to have become converted. When only low grade sites are available a decision is reached slowly and so there is more time for the discovery of a better site.

A decision and a departure of the swarm were found to be immanent when about 100 bees were frequenting a prospective home. By setting up two like empty hives at equal distances (and by making various changes during the course of the experiment so that the two sites remained in fact equally desirable to the bees) it was possible to have two groups of dancers in about equal strength. When each group had been built up to a hundred, each group, under the impression that a decision in favor of its site had been arrived at, set about to break up the cluster and to lead it off. Once in the air, however, the swarm got nowhere, and had to re-form a cluster.

The liveliness of the dances depends upon the qualities of the site discovered, but it depends also upon a peculiar behavior of the bees visiting there. At the site, a bee may suddenly burst into a group of bees standing about, or even circle about a single bee, and running with extremely hurried, nervous, zig-zag strides will ram its head into one or another bee, nudging it sharply, while carrying out vibratory shaking movements in the vertical. Most striking of all is the loud buzzing of the wings at intervals during these "Schwirrläufe," as Lindauer calls these performances.

Increased dancing in the swarm brings about more of this buzzing-running at the site, the buzzings at the site increase the vigor of the dances, and so on in an accelerating cycle that quickly reaches an optimum pitch of excitement and that leads to the departure of the swarm. The actual breaking up of the cluster is brought about by such buzzings performed on the swarm by the bees from the site. At such a time the bees at the site have practically all returned to the cluster and begin their excited buzzings, spreading over the surface of the swarm and boring into the cluster which begins to loosen up. As the excitement grows, 5 or ten bees fly off the cluster, then a few dozen more, then hundreds, and then within a few seconds the entire swarm is in the air and producing the familiar low, loud humming tone.

R. G. SCHMIEDER

Brachymyrmex depilis subsp. flavescens Grundmann a Synonym of Brachymyrmex depilis Emery (Hymenoptera: Formicidae)[1]

By A. C. Cole, The University of Tennessee, Knoxville

Grundmann (1952)[2] described *Brachymyrmex depilis flavescens* from a series of 22 workers collected in Big Cottonwood Canyon near Salt Lake City, Utah. Dr. Grundmann has generously supplied me with a series of his cotypes. I have examined these specimens carefully and have compared them with series of the typical species from both the eastern and the western United States including a series which I had collected in 1932 near Twin Falls, Idaho in a similar hibitat. From these studies I have reached the conclusion that *flavescens* is not significantly different from the typical *depilis* and that its structural characteristics fall well within what can be expected as normal variation of populations of *depilis*. Furthermore there is apparently nothing significant about the station of *flavescens* to segregate *flavescens* as a subspecies.

It seems very likely to me that Dr. Grundmann collected a series of callow workers which might even represent an incipient colony. If this should be true, Dr. Graundmann is not the only myrmecologist who has made such an error. The workers are smaller than those of *depilis* and their color is paler. Furthermore the integument is shriveled considerably.

I propose therefore that *B. depilis flavescens* Grundmann be relegated to the synonymy of *B. depilis* Emery.

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[1] Contribution No. 78, Department of Zoology and Entomology, The University of Tennessee.

[2] Grundmann, A. W. 1952. A new Brachymyrmex from northern Utah (Hymenoptera: Formicidae). Jour. Kansas Ent. Soc. 25: 117.

Current Entomological Literature

Compiled by **VENIA T. PHILLIPS**, Librarian

Academy of Natural Sciences of Philadelphia

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania pertaining to entomology, including all arthropods except Crustacea. Coverage will be world-wide as regards major contributions to systematics as well as for all papers on morphology, physiology, embryology, etc. In addition, for species from the Americas and the Pacific (Nearctic, Neotropical and Polynesian regions) all minor contributions to taxonomy, distribution, etc., will also be recorded.

This list gives references of the year 1953 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

GENERAL—Finney, G. L.—A technique for mass-culture of the six-spotted mite. [76] 46: 712–13. **Hervé, P.**—A propos d'un cas de mimétisme assez particulier. [59] 9: 25–26. **Michener, C. D.**—Life-history studies in insect systematics. [146] 2: 112–18. **Ristich, S. S. and D. Lockard.**—An aspirator modified for sampling large populations. [76] 46: 711–12, ill. **Ryckman, R. E. and C. T. Ames.**—Insects reared from cacti in Arizona (Dermaptera, Coleoptera, Diptera). [111] 29: 163–64. **Viette, P.**—Considérations sur le néotype. [59] 9: 13–20.

BIOGRAPHIES, OBITUARIES—Joy, Norman Humbert, 1874–1953.—Obituary by C. MacK. J. [60] ser. 4, 89: 213. **Peairs, Leonard M.**—An appreciation, with short biography, by C. E. Palm and E. N. Cory. [76] 46: 717. **Reichensperger, August.**—A tribute on his 75th birthday, by K. Gösswald, with portrait and bibliography. [Ent. Blätter] 49: 83–89. **Rocci, Ubaldo.**—Memorial to the lepidopterist who disappeared in 1943, with bibliography, by C. Taccani. [Atti Soc. Ital. Sci. Nat., Milano] 92: 61–66. **Sandras, Alfred,** –1953. Necrology, by L. A. Berger. [84] 53: 37. **Van Dyke, Edwin Cooper,** 1869–1952. Biography, with portrait, by V. M. Tanner. [66] 13: 29–34.

ANATOMY, PHYSIOLOGY, MEDICAL—Beckman, H. F., S. M. Bruckart and R. Reiser.—Laboratory culture of the pink bollworm on chemically defined media. [76] 46: 627–30. **Bodenstein, D.**—Studies on the humoral mechanisms in growth and metamorphosis of the cockroach, Periplaneta americana. I. Transplantations of integumental structures and experimental parabioses. [78] 123: 189–232.

Bonhag, P. F. and J. R. Wick.—The functional anatomy of the male and female reproductive systems of the mildweed bug, Oncopeltus fasciatus (Dallas) (Lygaeidae). [79] 93: 177–284, ill. **Bushland, R. C. and D. E. Hopkins.**—Sterilization of screw-worm flies with X-rays and Gamma-rays. [76] 46: 648–56. **Cloudsley-Thompson, J. L.**—Studies in diurnal rhythms. III. Photoperiodism in the cockroach Periplaneta americana (L.). [19] 6 (ser. 12) : 705–12, ill. **de Lerma, B.**—Biochimica e sviluppo embrionale degli insetti. II. Sulla natura e significato delle sostanze fluorescenti delle uova di Locusta migratoria L. [Arch. Zool. Ital.] 37: 81–91, ill., 1952. **Dicke, R. J.**—Maggot therapy of Actinomycosis. [76] 46: 706–07. **Fraenkel, G.**—Studies on the distribution of vitamin B_t (Carnitine). [30] 104: 359–71. **Harnisch, O.**—Untersuchungen zum gaswechsel der larve von Chaoborus crystallinus Licht. (= Corethra plumicornis). [159] 64: 97–111. **Hastings, J. W., W. D. McElroy and J. Coulombre.**—The effect of oxygen upon the immobilization reaction in firefly luminescence. [75] 42: 137–50. **Hayes, R. O.**—Determination of a physiological saline solution for Aedes aegypti (L.). [76] 46: 624–27. **Homann, H.**—Die entwicklung der Neberaugen bei araneen. I. [Biol. Zentralblatt] 72: 373–85, ill. **Lindauer, M.**—Bienentänze in der schwarmtraube (II). [100] 40: 379–85. **Ludwig, D.**—The activity of cytochrome oxidase during diapause and metamorphosis of the Japanese beetle (Popillia japonica Newman). [Trans. N. Y. Acad. Sci., ser. II] 15: 243–44. Cytochrome oxidase activity during diapause and metamorphosis of the Japanese beetle (Popillia japonica Newm.). [Jour. Gen. Physiol.] 36: 751–57. **Munson, S. C.**—Some effects of storage at different temperatures on the lipids of the American roach and on the resistance of this insect to heat. [76] 46: 657–66. **Oftedal, P.**—The histogenesis of a new tumor in Drosophilia melanogaster, and a comparison with tumors in five other stocks. [Zeitschr. Vererbungslehre] 85: 408–22. **Pfaff, W.**—Ueber den feinbau der fibrillen aus der kutikula von Periplaneta americana L. [100] 40: 386–87. **Pratt, J. J. and F. H. Babers.**—Sensitivity to DDT of nerve ganglia of susceptible and resistant house flies. [76] 46: 700–02. **Robinson, I.**—The hypopus of Hericia hericia (Kramer), Acarina, Tyroglyphidae. [156] 123: 267–72, ill. **Rodriguez, J. G.**—Detached leaf culture in mite nutrition studies. [76] 46: 713. **Schlegel-Oprecht, E.**—Versuche zur auslösung von mutationen bei der zoophagen cynipide Pseudeucoila bochei Weld und Befunde über die stammspecifische abwehrreaktion des wirtes Drosophila melanogaster. [Zeitschr. Vererbungslehre] 85: 245–81. **Schneider, F.**—Weitere untersuchungen über die optische orientierung der maikäfer. [Verh. Schweiz. Naturf. Ges.] 132: 155–56. **Selman, G. G. and S. J. Counce.**—Abnormal embryonic development in Drosophila induced by ultrasonic treatment. [98] 172, no. 4376: 503–04. **Srivastava, M. D. L. and C. C. Das.**—Sex chromosomes of Ranatra elongata. [98] 172, no. 4376: 505. **Sturtevant, F. M., L. D. Calvin and O. Park.**—The analysis of variation in a natural population of lady beetles. [Biometrics] 9: 117–26. **Swiecimski, M. J.**—The significance of sight and memory in the capturing of food by the sand-beetle (Cicindela hybrida L.). [Compt. rend. Acad. Polon. Sci. Lettr., Classe Sci. Math. et Nat.] 1951, no. 5–10: 33. **Watanabe, M. I. and C. M. Williams.**—Mitochondria in the flight muscles of insects. II. Effects of the medium on the size, form, and organization of isolated sarcosomes. [Jour. Gen. Physiol.] 37: 71–90.

ARACHNIDA AND MYRIOPODA—Atcheson, W. C.—An ecological study of three species of mites on American linden. [76] 46: 705. **Causey, N. B.**—On five new North American millipeds and records of some established species. [12] 50: 152–58, ill. **Chamberlin, R. V.**—Some American millipeds of the order Spirobolida. [12] 50: 138–51, ill. (*k). **Finney, G. L.**—Acarina. (See General.) **Homann, H.**—(See Anatomy.) **Imamura, T.**—Notes on the moulting of the adult of the water mite, Arrenurus uchidai n. sp. [Annot. Zool. Japonenses] 25: 447–51, ill., 1952. **Keegan, H. L.**—Collections of parasitic mites from Utah. (Laelaptidae.) [66] 13: 35–42. **Keifer, H. H.**—Eriophyid studies. XXI. (Includes formulae for mounting media). [Bull. Cal. Dept. Agr.] 42: 65–79 (*). **Mihelčič, F.**—Beitrag zur kenntnis der oribatei und collembolen der humusböden. [Arch. Zool. Ital.] 37: 93–106, ill., 1952. **Newell, I. M.**—The natural classification of the Rhombognathinae (Acari, Halacaridae). [146] 2: 119–35, ill. **Ogawa, K.**—Chromosome studies in the Myriapoda. VI. A study of the sex-chromosomes in two allied species of chilopods. [Annot. Zool. Japonenses] 25: 434–40, ill., 1952. **Robinson, I.**—Acarina. (See Anatomy.) **Rodriguez, J. G.**—(See Anatomy.) **Willmann, C.**—Tarsale sinnesorgane dei der gattung Rhagidia und anderen prostigmatischen milben. (Acarina, Rhagidiidae.) [159] 150: 215–23, ill.

SMALLER ORDERS—Denning, D. G.—A new genus of Limnephilidae (Trichoptera). [111] 29: 165–69, ill.

Ferris, G. F.—Illustrations of three species of sucking lice, with notes on a fourth species (Anoplura). [90] 18: 52–53, ill. **Gardner, A. E.**—The life-history of Libellula depressa Linn. (Odonata). [Ent. Gazette] 4: 175–201, ill. **Mehelčič, F.**—Collembola. (See Arachnida.) **Ross, H. H.—**Additional material on the phylogeny and dispersal of Atopsyche (Trichoptera: Rhyacophilidae). [152] 43: 287–93, ill. (*). **Stark, H. E.**—An unusual occurrence of three spermathecae in a specimen of Hystrichopsylla dippiei (Siphonaptera). [111] 29: 135–37, ill. **Uchida, H.**—On three new species and a new form of Japanese Smynthuridae (Collem.), with special reference to the dental setae. [Annot. Zool. Japonenses] 26: 1–13, ill. **Wray, D. L. and G. F. Knowlton.**—Additions to the list of the Collembola of Utah. [66] 13: 43–46.

ORTHOPTERA—Cloudsley-Thompson, J. L.—(See Anatomy.) **de Lerma, B.**—(See Anatomy.)

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Nesting Notes on the European Hornet in North Carolina

By DAVID L. WRAY, Raleigh, N. C.

The European Hornet (*Vespa crabro* var. *germana* Christ) was first recorded in North Carolina when a single male was taken near the railroad tracks on the State College campus in Raleigh, October 5, 1940 ("Supplement to Insects of North Carolina," 1942, C. S. Brimley). Our next record of this species was Sept. 22, 1944, when J. A. Harris collected 1 male and 3 females at Guilford College (Guilford Co.) and saw 6 others feeding heavily on *Ligustrum* shrubs and apparently doing some damage to a nursery there. M. W. Wing (ENT NEWS, vol. LX, January 1949) gives four other records of this species within the State: Greensboro, Reidsville, Carthage, and Mocksville. The Greensboro record is of 1 female and a portion of a nest, in early October 1946. The following records and notes from our Insect Survey will show its present distribution and would indicate that it is firmly established from a nesting standpoint.

The general distribution of this species as of this date (December 1952) in North Carolina would lie in the central or Piedmont area of the State, bounded on the east by a line drawn in a southwesterly direction through Raleigh (Wake Co.) and Aberdeen (Moore Co.), and on the west in a southwesterly direction along the lower edges of the Mountain region proper from Wilkes County on the North through Rutherford County on the southwest. So far we have no records for the large eastern or Coastal Plain section, nor for the Mountain region

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proper. Many of the records and specimens for this central region resulted from my article on this species in the *Agricultural Review* (1950).

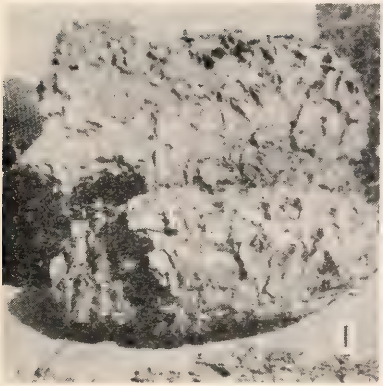
Probably the first record of this species nesting in North Carolina was made by O. E. Brown, an apiarist and a keen observer of nature, near Asheboro in the summer of 1945. This is in the center of the State and some 25 miles south of Greensboro.

Nesting and Distribution Records

This species has been found nesting from Raleigh on the east to as far west as Rutherford County, with many places in between. It has been recorded as occurring in nineteen counties in this central section.

The following locality records and notes about its habits will give its status in North Carolina.

Raleigh (Wake Co.): A nest was found in the barn of F. G. James hanging from the apex of the roof and inside a loft. It was about 2 feet long and about 10 inches in diameter. I collected this nest in October 1950 when it was empty. In August 1950 J. B. Lyon brought in some large lilac limbs from his place 12 miles north of town which had been girdled by the hornets gnawing small pieces of the bark off (about 1 inch wide and 2 inches long). On August 15, 1950 I observed a large nest built in a large oak tree with a hollow about 3 feet up from the ground, located 5 miles north of town. The hornets were working in and out like a large swarm of bees, some feeding on the sap exuding from a bruised place on the tree nearby. Cary (Wake Co.): Adults observed feeding on sap from an oak tree. Neuse (Wake Co.): Two nests were found here in trees, and one in a house by J. J. Taylor. Leesville (Wake Co.): Nesting in tree in yard of O. J. Smith. Durham (Durham Co.): Reported stinging a farmer near here and causing hospitalization. Chapel Hill (Orange Co.): On August 19, 1950 I observed a nest on the farm of T. W. Brown. It was built in a large hollow of a white oak tree about 3 feet up from the ground, and on the banks of a creek. He states that they nested here in



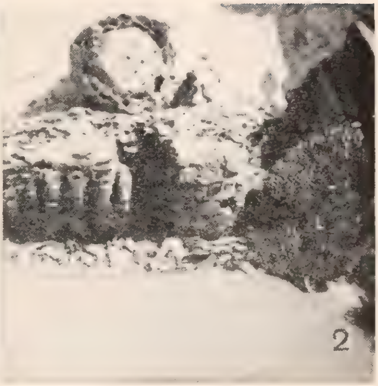


FIG. 1. Top nest: from tobacco barn, Mocksville, N. C. (3 feet long). Bottom nest: from Raleigh, N. C. FIG. 2. Nests torn open to show combs.

1949. Oxford (Granville Co.): Two adult specimens were collected by Mr. Stahl of the Experiment Station. Burlington (Alamance Co.): 3 specimens were sent in by Geo. E. Curtis, who states that they are nesting here. Aberdeen (Moore Co.): One specimen from here and they were reported as catching and eating honey bees. Asheboro (Randolph Co.): O. E. Brown found them first nesting here in 1945 and 1946, and each year since. On August 9, 1950 a nest was found between the roof and ceiling of a grain storage building, and I observed a portion of this nest. Near here, another farmer reported a nest in a tree and complained that the hornets were feeding on his apples. I went with Mr. Brown to his orchard and observed the hornets come to the ripening apples. They would sit on an apple and begin to gnaw a small hole through the skin by moving around in a circle, then enlarge the hole to about a half to three-fourths inches in diameter, all the time gnawing out the inside. After that they would concentrate on eating the "meat" out. Several apples were found, under the trees, that consisted only of the outside skin or peeling and the central core part. Star (Montgomery Co.): In August 1950 Mr. Brown took me to a large nest in the northern part of this county. It was built in a hollow maple tree, near a barn, with an opening about 10 feet from the ground. On a nearby large oak tree we observed hornets feeding on exuding sap. Around this place were found many bits of insect bodies, mostly wasps, beetles, etc., upon which the hornets had fed. We watched them catch other wasps. Indian Trail (Union Co.): On August 23, 1950, T. E. Cartner submitted specimens and stated that large numbers were attacking trees and damaging bark. Mathews (Mecklenburg Co.): In the summer of 1950, a nest was found in an old hollow tree near a house by V. L. Stilwell. The hornets were working "in and out of the tree like bees." Salisbury (Rowan Co.): Specimens were taken here September 28, 1951 by W. J. Walton. Mocksville (Davie Co.): A large nest was taken here on August 25, 1950 by A. E. Hendrix. This nest was the largest found within the State so far. It was built inside a tobacco barn up in a corner near the roof. It was 36 inches long and 20 inches in diameter, and fastened at the top and two sides. Cana (Davie Co.): Adults taken here were girdling lilac bushes. Mrs. C. F. Sofley stated that "they cut a strip of bark off about one inch wide all around the stems." Winston-Salem (Forsyth Co.): A colony, in the basement of a house, that had built a nest about the size of a gallon bucket was destroyed by spraying. They were attacking lilac bushes also. Sherman Shore reported them feeding on sap from a large oak tree, and also observed them around lights at night where they appeared to feed on insects attracted by the lights. Kernersville (Forsyth Co.): Feeding on apples. W. G. Entrekin states that "they eat all the apple leaving only the skin and core. People pick up apples with a dinner fork to avoid stings." Leaksville (Rockingham Co.): A nest that was found here in a barn by L. J. Griffin was 18 inches long and 12 inches in diameter. Madison (Rockingham Co.): Hornets were observed feeding on honey bees, and also on watermelon rinds and on sap exuding from a willow tree. East Bend (Yadkin Co.): One specimen. Elkin (Surry Co.): A nest was found here by Lin Hendren built inside the weatherboarding of a frame house. Many specimens and a portion of the nest were sent to me for examination. Benham (Wilkes Co.): A large nest was found here by Raymond Harris, built inside of an old log house. The nest was hanging down from the rafters and was almost as large as a half bushel basket. Maiden (Catawba Co.): Specimens were taken here September 15, 1951. Union Mills (Rutherford Co.): Specimens were taken here and there was a nest in a large tree. This is the farthest locality to the southwest and is in the upper foothills at the base of the mountain region proper.

The Nest

The nest of the European Hornet is generally large in size and is composed of many layers of combs, about 24 in the largest nest found at Mocksville. These combs are constructed with intercomb supports of matrix. Those nests examined that were hanging in barns are completely covered with a tan to light brownish paper material, somewhat laminated in appearance. All along the sides were entrance tubes which opened several inches from the horizontal entrance and extended upward to the floor entrance; thus by turning the nest upward one could see many openings protected by these tubular structures. The paper of the nest is very brittle and the nests are damaged by handling, no matter how carefully done. Upon rubbing some of the material in one's hand it appears like a coarse sawdust that has been worked together into paper and that crumbles easily.

Notice to Homopterists

Professor Z. P. Metcalf, of the University of North Carolina, has received a grant-in-aid from the National Science Foundation for continuing the publication of the Catalogue of the Homoptera. He is now asking the cooperation of all homopterists for help in securing reprints and other data relating to the Auchenorhyncha (Fulgorids, Jassids, Cicadas, and Membracids). For detailed information please write to Professor Metcalf, Box 5215, State College Station, Raleigh, N. C.

Biological Notes on Psammaecius tricolor (Cresson) (Hymenoptera: Sphecidae: Gorytini)

By H. E. Evans, C. S. Lin, and C. M. Yoshimoto,
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On August 18, 1952, numerous specimens of *Psammaecius tricolor* (Cresson) were found nesting by the writers at Ulysses, Grant Co., in southwestern Kansas. Our observations cover but a single day and are by no means complete, but considering the scarcity of information on the biology of wasps of this group, they seemed worth reporting at this time. We are indebted to Karl V. Krombein for identifying *P. tricolor* and its parasite *Nysson bellus* Cresson for us, and to David A. Young for identifying the leafhopper prey of *tricolor*. These studies were made as part of a project on the comparative behavior of solitary wasps, supported by the National Science Foundation on grant number G-248.

The Gorytini are predominantly soil-nesters which utilize Homoptera Auchenorhyncha as prey. The species of *Psammaecius* which have been previously studied prey upon Membracidae. *P. costalis* (Cresson) preys upon several genera of adult Membracidae (Reinhard, 1925a) while *P. nebulosus* (Packard) uses nymphs of several genera (Pate, 1946; Krombein, 1953; unpublished observations of writers); there is one record of *P. spilopterus* (Handlirsch) taken with an adult membracid (Pate, 1946). The nesting behavior of *costalis* is best known, having been described in some detail by Reinhard (1925a and later in "The Witchery of Wasps," 1929). Krombein (1953) has recently published observations on the nesting of *nebulosus*. *Psammaecius tricolor* differs from all these species in that it preys upon Cicadellidae; several features of its nesting behavior have not been noted for the other species.

Ecology. This aggregation of *P. tricolor* consisted of 40–50 nesting females, of which 12 were observed in some detail. No males were encountered. The site was a small flat sandy area at the lower edge of a sloping fallow field, apparently formed by erosion from the field. The top three or four inches were light sand, below this a sandy loam. Numerous low spreading plants were scattered over the sand, the most abundant a species of *Euphorbia*. Below the edge of the field the land sloped away and was covered with a dense growth of various herbs, finally dropping off to a grassy area along a small stream which flowed into the North Fork of the Cimarron River about half a mile away. A species of *Sphex* and a *Plenoculus* were also nesting here.

The first specimens were seen at 11 A.M., and observations were made from then until 7 P.M., when most activity had ceased. All the nests were located near the bases of plants, and none of them in the more open stretches of sand. None of the nests were less than 4 inches apart and most of them were separated by a foot or more. All of our observations were made at the nesting sites, as we were unable to trace the wasps to the source of their prey, and hence did not observe the capture of the prey.

Provisioning the nest. Psammaecius tricolor was using only one species of leafhopper as prey in this locality: *Parabolocratus brunneus* Ball. The nineteen cells which were eventually examined contained 194 of these green leafhoppers, of which 191 were adult females and the other three last instar nymphs. The prey is carried to the nesting site in flight, held tightly beneath the body. The flight of this species is rather slow, and the wasp characteristically lands several inches away from the nest entrance (sometimes on a plant) rather than flying directly to it. On landing, the wasp stands on its front and hind legs and holds the leafhopper with the middle legs, venter-up, tightly against the under side of its thorax and abdomen. After landing and before entering the burrow the wasp invariably moves its abdomen up and down rather slowly in a broad arc, while holding the wings motionless at a slight angle from the horizontal. These movements of the abdomen are highly characteristic, and we have not observed similar movements in other gorytine wasps which we have studied.

After landing the wasp pauses a moment, then walks or takes one or more short flights to the burrow. In cases where we had in any way disturbed the immediate vicinity of the burrow, the wasp had difficulty in locating it, and would occasionally dig in two or three different spots before finding it. On arrival at the burrow, the entrance is opened with a few strokes of the front legs while still holding the leafhopper with the middle legs and standing on the hind legs. The wasp then enters the burrow directly, leaving it open while inside. Usually less than half a minute is spent inside the burrow; on leaving, the nest is closed with some care from the outside, and the wasp flies off. The amount of time required to obtain another leafhopper varies considerably; the minimum time recorded was 3 minutes, the average somewhere between 5 and 10. One very active specimen was observed to bring in 10 leafhoppers in 50 minutes; another brought in 8 in 30 minutes. Without exception the burrow is closed when the wasp leaves to fly after prey, and left open while it is inside. However, on a number of occasions it was noted that the wasp stayed in the burrow an unusual length of time (about 15 minutes) and at these times threw up a certain amount of earth from the inside. We concluded that these intervals were used to dig a new cell.

Eleven nests were eventually dug out. The length of the burrow to the deepest cell averaged 10.5 cm. (ranging from 7 to 14 cm.); the depth of the deepest cell beneath the surface was 6 (4–8) cm.; the angle formed with the horizontal averaged 35°. The diameter of the burrow was about 3 mm., that of the cell about 7 mm. Most of the burrows were straight or nearly so. Four of these nests had been completed and had received the final closure; of these one had two cells, two had three cells, and one had four. In the nest with four cells, the two deepest cells contained larvae and the other two contained eggs; in another case all contained eggs but the egg from the deepest cell hatched first. From this we concluded that the deepest cell is the first prepared and provisioned, and the others prepared a short distance off from the main tunnel progressively back toward the entrance. However, the cells were invariably very close together and sometimes separated by only a very few millimeters of sand. We consider it probable that the wasp provisions a single nest over a period of more than one day (at least in some cases) since larvae and eggs were sometimes found in different cells of the same nest.

The number of leafhoppers in the twelve completed cells examined averaged 11 per cell (7–19); all were one species and nearly all adult females, as previously noted. All had the ventral side up; all seemed thoroughly paralyzed. A small percentage of the leafhoppers were parasitized by Dryinidae, as evidenced by dark sacs protruding from between the abdominal segments. The egg of the wasp was invariably found upon the uppermost leafhopper. The egg is whitish, about 2 mm. long, and is laid longitudinally along the ventral side of the thorax laterad of the leg-bases, extending back about as far as the second abdominal segment. Several eggs and two small larvae were kept for rearing. One of the eggs hatched the following day, but the others failed to hatch, and the two larvae failed to develop. Since we were on a prolonged field trip, it was not possible to care for these delicate insects properly. None of the leafhoppers showed any signs of recovery.

Filling and digging. As noted above, burrows were closed temporarily by a small amount of sand while the wasp was away hunting. The final closure of the burrow, after all the cells had been completed, was very different from this, taking upwards of 30 minutes. In the beginning stages, sand is probably scraped from the sides of the burrow, since by the time the wasp is seen outside, the burrow is almost filled. In later stages the wasp rakes sand from around the entrance into the burrow, then backs in and pounds it down with the tip of the abdomen, which is moved up and down vigorously, the tip describing more or less of a circle. These actions are very reminiscent of *Poecilopompilus interruptus* (Say), a pompilid wasp somewhat similar in color and mannerisms to *Psammaecius tricolor*. When the burrow is full of carefully packed sand, the wasp kicks sand over the entrance from a distance of up to 7 cm., producing a small mound which is then flattened out by kicking in various directions.

Apparently these wasps usually complete their nests in late afternoon and then dig a new nest which they spend the night in and begin provisioning the next morning. All the final fillings and all the new diggings we observed were between 5 and 7 P.M. In digging, the wasp backs out of the burrow in a straight line as much as 10 cm. dragging sand with the front legs, then works forward toward the burrow scuffing sand with the front legs. The result is a small trough extending out a few centimeters from the entrance. About 45 minutes are required to complete the nest, and the sand at the entrance is then leveled off before the wasp enters, closing from the inside. One such nest dug out at 6:50 P.M. contained the adult wasp in the empty cell, where she presumably would have spent the night; there was an outer closure of about 15 mm. of sand, and an inner closure of about the same size just before the cell.

Habits of Nysson bellus. Several of these tiny, brightly colored wasps were observed in the nesting area of *Psammaecius tricolor.* Since wasps of this genus are known to be cleptoparasites of Gorytini, we suspected them to be parasitizing *tricolor.* On only one occasion, however, was a *Nysson* seen to enter a nest. This specimen has been digging here and there near a *Psammaecius* nest without success. When the *Psammaecius* landed nearby, the *Nysson* remained motionless. After a moment's pause, the *Psammaecius* entered the nest with a leafhopper; the *Nysson* followed her in but came out almost immediately. The *Psammaecius* remained in the nest about 15 minutes, which was unusual behavior since she was not building a new cell. During this interval the *Nysson* entered the nest three times and came out twice. Finally the *Psammaecius* emerged while the *Nysson* was still inside, closed from the outside, and flew away. The *Nysson* emerged a few minutes later and was captured. The nest was then dug out and found to contain two cells, the innermost apparently completed. However, no eggs of either wasp were located in either cell, probably having been dislodged during the digging.

One cell in another nest was found to contain two larvae, one slightly larger than the other. Since none of our rearings were successful, we were unable to be certain that one of these represented the larva of *Nysson,* and the evidence against *Nysson bellus* remains purely circumstantial. Reinhard (1925b) found that *Nysson hoplisivora* Rohwer enters the cell of *Psammaecius costalis* (Cresson) before it is fully provisioned and lays its egg under the wings of a prey. The *Psammaecius* later lays her egg on the top prey, but the *Nysson* egg hatches first and the larva destroys the *Psammaecius* egg, then feeds upon the contents of the cell.

Discussion. The Gorytini are usually regarded as a somewhat generalized tribe of the Nyssoninae, perhaps close to the stock which gave rise to the Stizini and finally the Bembicini. In this light certain aspects of the behavior of *Psammaecius tricolor* may be worth reviewing: (1) the species appears to be distinctly gregarious in its nesting; (2) the prey is carried by the middle legs, venter-up, beneath the body (as in the Bembicini); (3) the manner of digging strongly suggests the Bembicini; (4) the tip of the abdomen is used for packing the soil in the burrow. The last named habit is well developed in the Bembicini (and in certain other Sphecidae as well) and it is of considerable interest to find it well developed in *Psammaecius.* It will be many years before the phylogeny of behavior in the Sphecidae is thoroughly understood, and in the meantime we can do little more than speculate on some of the possibilities and await the accumulation of data on many more species.

REFERENCES CITED

KROMBEIN, K. V. 1953. Biological and taxonomic observations on the wasps in a coastal area in North Carolina (Hymenoptera Aculeata). Wasmann Jour. Biol. (in press).

PATE, V. S. L. 1946. Prey records of Gorytine wasps (Hymenoptera, Sphecidae). Bull. Brooklyn Ent. Soc. 41: 99.

REINHARD, E. G. 1925a. The wasp *Hoplisus costalis,* a hunter of tree-hoppers. Jour. Wash. Acad. Sci. 15: 107–110.

——. 1925b. The wasp *Nysson hoplisivora,* a parasitic relative of *Hoplisus costalis.* Jour. Wash. Acad. Sci. 15: 172–177.

——. 1929. The Witchery of Wasps. New York, The Century Company. pp. 235–271.

Two New Species of Perdita from North Carolina (Hymenoptera: Apoidea) [1]

By P. H. Timberlake, University of California Citrus
Experiment Station, Riverside, California

Both of the following species of *Perdita* were discovered at Holly Shelter, North Carolina, by Professor T. B. Mitchell on October 5, 1951. Attempts to obtain additional specimens of *P. discreta* in 1952 failed, but *P. polygonellae* was collected again at the middle of September.

Perdita polygonellae n. sp.

A member of the *octomaculata* group, with a ferruginous abdomen. This is the only species of the group so far described that has this character, and it is also the only known eastern species of *Perdita* with an entirely red abdomen.

Female: Head and thorax dark olive green. Basal half of mandibles, sides of labrum, clypeus, lateral and supraclypeal marks, pale yellow. Mandibles shading into testaceous at middle and into rufous at apex. Middle of labrum more or less piceous. The usual pair of clypeal dots minute. Lateral marks large, higher than wide, narrowed above and ending obtusely at level of antennae. Supraclypeal mark generally a little notched above, and sometimes divided into two spots (rarely absent). Anterior border and large cuneate marks on each side of hind margin of pronotum, and the tubercles, yellow. Abdomen uniformly ferruginous, with only the lateral foveae of tergite 2 black, but occasionally (paratypes) with a faint brownish subapical band on the first segment, mostly in the form of sublateral oval spots, and a more distinct blackish spot on disk of tergite 5. Legs black, the under margin of posterior side and the apex of front femora, apex of middle femora, anterior side of front and middle tibiae and basitarsi, apex of hind femora, and apex of middle and hind coxae and their trochanters, yellow. Antennae blackish, the under side of scape

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[1] Paper No. 767, University of California Citrus Experiment Station, Riverside, California.

pale yellow, the under side of flagellum dull yellowish. Tegulae testaceous, with a yellow basal mark. Wings somewhat dusky, the nervures and margins of stigma brown.

Head somewhat broader than long, with face below antennae gently convex. Clypeus only slightly produced and with the lateral extensions broad and nearly fully visible in frontal aspect. Middle of labrum produced, forming a small obtusely pointed lobe that is medially ridged beneath. Facial foveae twice as wide as interval between them and eye margin, and three-fourths as long as space between sockets and anterior ocellus. Pygidial plate with arcuate sides and a rather narrow, rounded apex. Tarsal claws with a minute inner tooth. Head and thorax nearly uniformly tessellate and dullish, with minute setigerous punctures more apparent on mesonotum than on frons. Pubescence of head and thorax pale ochreous, fairly long, erect, and moderately abundant. Length, 4.5–6 mm.; anterior wing, 3–3.5 mm.

Male: Similar to female, but mandibles, except rufous tips, labrum, and face almost or quite entirely below level of antennae, white. Subantennal plates sometimes green at lower end, varying from more than half green to entirely white. Posterior orbits yellowish white, sometimes nearly to middle of eyes, or the white reduced to a small spot near base of mandibles. Thorax and abdomen as in female, except that the abdomen is marked with fuscous on basal half of tergite 1 and usually with an apical dusky band on tergites 1 to 4 (or 5), this band frequently reduced to a transverse oval spot on each side, where the duskiness is accentuated, and rarely with an extension basad in median line as a spot or short stripe. Legs with the dark area on femora more reduced than in female. Scape of antennae yellow, except at apex above, the pedicel and flagellum blackish above and brownish yellow beneath. Tegulae as in female. Wings a little more dusky than in female, the nervures and margins of stigma blackish.

Head slightly broader than long, the cheeks no wider than the eyes. Lateral extension of clypeus broad and gradually reflexed. Facial foveae about twice as long as broad. Mandibles rather short, curved, and simple. Tarsal claws strongly bifid, the teeth nearly equal. Labrum nearly normal. Apical tergite with a rather narrow, apically rounded pygidial process. Sculpture and pubescence very nearly as in the female. Length, 4.5 mm.; anterior wing, 3.2 mm.

Holotype female and *allotype*, Holly Shelter, NORTH CAROLINA, on *Polygonella polygama*, Oct. 5, 1951 (T. B. Mitchell). *Paratypes* from the same locality and flower: 33 females, 3 males, Oct. 5, 1951; 21 females, 17 males, Sept. 16, 1952.

Types to be deposited in the U. S. National Museum; paratypes in the collection of the author and of T. B. Mitchell.

Perdita discreta n. sp.

Similar to *P. octomaculata* (Say), but smaller with the markings white, those of abdomen reduced to small, transverse spots.

Female: Head and thorax dark green, the labrum and clypeus black. A narrow median stripe on clypeus, and small lateral marks, yellowish white. The latter slender and acute above at level of antennae and globosely widened opposite the clypeus (in paratype reduced to a narrow curved mark, not quite reaching level of antennae). Mandibles testaceous, becoming reddish at apex and with a white spot at base. Thorax entirely dark, the propodeum a little more bluish green than the mesonotum. Adbomen black, the customary bands represented by transversely linear white marks, one on each side of tergites 1 to 4; those on tergite 1 at base of disk and narrowly separated; those on following segments basal and widely separated, becoming a little oblique on tergites 2 and 3; and those on 4 sometimes evanescent (paratypes). Pygidial plate ferruginous. Antennae black, the flagellum slightly brownish beneath toward apex. Legs black, the tip of front and middle femora, extreme apex of hind femora above, anterior side of front tibiae and basitarsi, and a line on middle tibiae, pale yellow. Tegulae pale testaceous. Wings dusky (grayish), the margins of stigma and nervures fuscous.

Head about as wide as long, the facial foveae narrow and elongate. Stigma of anterior wings rather narrow; marginal cell with the parts beneath and beyond stigma equal. Pygidial plate broad, slightly ridged medially and rounded or obscurely emarginato-truncate at apex. Tarsal claws with a small inner tooth near apex. Head and thorax dullish, densely tessellately shagreened, and impunctate except on anterior part of face. Abdomen microscopically lineolate. Pubescence moderately developed, erect, whitish, becoming pale ochreous on mesonotum. Length about 5 mm.; anterior wing, 3.1 mm.

Two females (*holotype* and *paratype*), Holly Shelter, NORTH CAROLINA, Oct. 5, 1951 (T. B. Mitchell). There is no flower record for these specimens but they carry a fine-grained yellow pollen, presumably from some Composite.

Holotype returned to T. B. Mitchell for ultimate deposit in the U. S. National Museum.

P. discreta and the four similar eastern forms of the *octomaculata* group may be distinguished as follows:

1. Markings yellow, including marks on pronotum and tubercles.......................................2
   Face with three small yellowish-white marks, the thorax entirely dark and the abdomen with transversely linear white marks on each side of tergites 1 to 3 or 4; length, 5 mm.......................................*discreta* n. sp.
2. Lateral face marks much higher than wide, generally terminated bluntly at anterior end of facial foveae; superclypeal mark sometimes developed..........................3
   Lateral face marks triangular, usually hardly higher than wide and acute above; supraclypeal mark absent; abdominal marks usually widely separated, those on tergites 2 to 4 oblique; length, 7 mm.........*octomaculata* (Say)
3. Supraclypeal mark large..............................4
   Supraclypeal mark absent or represented by two dots or a line; yellow band on tergites 1 and 4 (usually also on 5 and rarely on 3) narrowly interrupted, that on tergite 2, and usually on 3, widely interrupted, with the remnants oblique; length, about 8 mm...*consobrina consobrina* Timb.
4. Scape narrowly yellowish beneath; abdominal bands broad, those on tergites 2 and 3 moderately well, and the others narrowly interrupted; wings a little dusky.......................................*consobrina lepida* Timb.
   Scape yellow except above on apical half; abdomen with bands on first five segments moderately wide and narrowly interrupted medially; wings clear, the nervures yellowish; length, about 6–7 mm.....................*swenki* Cwfd.

Aphids on Rudbeckia

Aphids have been observed to be very numerous upon *Rudbeckia occidentalis* in various shaded canyon areas of Utah and southern Idaho. Most of the aphid material, recently examined by Professor M. A. Palmer, proved to be *Macrosiphum cockerelli* Hottes. On September 6, 1945, this species was abundant on leaves and stems of these plants near the summit of Ephraim Canyon, Utah. Here a careful examination showed some syrphid larvae, adult and larval ladybird beetles, including adult *Hippodamia quinquesignata* Kirby and *H. lecontei* Muls., damsel bugs which were largely *Nabis alternatus* Parshley, and *Anthocoris* sp. preying on this aphid. This was the greatest concentration of predators the writer has observed associated with this species. Other collections of *M. cockerelli* in Utah include: American Fork Canyon and Mt. Timpanogos, July 26, 1942, Mt. Nebo, July 25, 1942, Santaquin Canyon, Settlement Canyon, Monte Cristo and Indian Canyon. Also very abundant on the same host at Mink Creek Canyon and Emigration Canyon, in southern Idaho, August 14, 1942, when C. F. Smith and I examined this host at several stops.

Macrosiphum rudbeckiarum (Cockerell) was collected at Mt. Nebo, Utah, August 14, 1943. It is less numerous than *M. cockerelli* on *Rudbeckia*. *M. rudbeckiarum* also was collected in Mink Creek Canyon, Idaho, August 14, 1942, by C. F. Smith and the writer.—G. F. Knowlton, Logan, Utah.

Current Entomological Literature

Compiled by **VENIA T. PHILLIPS**, Librarian

Academy of Natural Sciences of Philadelphia

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania pertaining to entomology, including all arthropods except Crustacea. Coverage will be world-wide as regards major contributions to systematics as well as for all papers on morphology, physiology, embryology, etc. In addition, for species from the Americas and the Pacific (Nearctic, Neotropical and Polynesian regions) all minor contributions to taxonomy, distribution, etc., will also be recorded.

This list gives references of the year 1953 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

GENERAL—**d'Assis-Fonseca, E. C. M.**—The pinning and setting of flies. [Ent. Record] 65: 264–66. **Cheesman, E.**—Insects: their secret world. Wm. Sloane Associates, N. Y., 246 p., ill. $3.50. (Reviewed by L. B. [64] 36: 124.) **Davis, J. J.**—Insects of Indiana for 1952. [Proc. Ind. Ac. Sci.] 62: 176–80. **Hall, R. R., A. E. R. Downe, C. R. MacLellan & A. S. West.**—Evaluation of insect predator-prey relationships by precipitin test studies. [92] 13: 199–204. **Hayward, K. J.**—An entomologist in Argentina. I. Early days. The Chaco Santafecino. [Ent. Record] 65: 249–55. **Hocking, B.**—The intrinsic range and speed of flight of insects. [126] 104: 223–345, ill. **Kato, M. & M. Toriumi.**—Studies on the associative ecology of insects. IV. Synecological analysis of the larval association of mosquitoes in the bambo thicket. [150] 19: 152–60, ill., 1951. **Leppik, E. E.**—The ability of insects to distinguish number. [15] 87: 229–36, ill. **Worth, C. B.**—Construction and use of a simplified window trap for insects. [92] 13: 204–06, ill. **Young, F. N.**—The approach to taxonomic problems. (Illus. by the Col. genus Matus.) [Proc. Indiana Ac. Sci.] 62: 172–75.

BIOGRAPHIES, OBITUARIES—**Clarke, L. Lyell,** 1889–1953.—Obituary notice and short biography by O. McFeeley. [92] 13: 215. **Corporaal, Johannes Bastian,** 1880–1952.—In memoriam (with port. and bibl.) by P. van der Wiel. [149] 96: 1–7. **Dammerman, Karel Willem,** 1885–1951.—In memoriam (with port. and bibl.) by W. Roepke. [149] 96: 9–12. **Graves, Philip Percival,** 1876–1953.—Obituary, signed E.S.A.B. [Ent. Record] 65: 272. **Thurman, Deed Cleveland, Jr.,** 1921–1953.—In memoriam (with port.) by R. F. Peters and H. L. Trembley. [92] 13: 214–15.

ANATOMY, PHYSIOLOGY, MEDICAL—**Arvy, L. & M. Gabe.**—Données histophysiologiques sur les formations endocrines rétro-cérébrales chez les Ecdyonuridae (Ephémeroptères). [Bull. Soc. Zool. France] 75: 267–85, ill., 1950.

Berg, P. W.—Some laboratory experiments on resistance of the pomace fly to DDT poisoning. [Proc. Ind. Ac. Sci.] 62: 211–16. **Bodenstein, D.**—Studies on the humeral mechanisms in the growth and metamorphosis of the cockroach, Periplaneta americana. II. The function of the prothoracic gland and corpus cardiacum. [78] 123: 413–31. **Cloudsley-Thompson, J. L.**—Diurnal rhythms of locomotory activity in isolated migratory locusts. [60] 89: 233–35. **Dethier, V. G.**—Summation and inhibition following contralateral stimulation of the tarsal chemoreceptors of the blowfly. [30] 105: 257–68. **Dobzhansky, T. & B. Spassky.**—Genetics of natural populations. XXI. Concealed variability in two sympatric species of Drosophila. [Genetics] 38: 471–84. **Edney, E. B.**—The temperature of woodlice in the sun. [77] 30: 331–49 (Incl. data on Blatta). **Fukaya, M., H. Chino & H. Inque.**—On the larval diapause in the rice stem borer. (Japanese, with Eng. summary.) [109] 8: 83–8, ill., 1952. **Grison, P. & R. Ritter.**—Réactions géotactiques et phénomènes sensoriels chez le doryphore (Leptonitarsa decemlineata Say). [C. R. Soc. Biol.] 147: 626–27. **Haget, A.**—Analyse expérimentale des conditions d'edification d'une gonade embryonnaire chez le coleoptere Leptinotarsa. (Chrysomelidae.) [C. R. Soc. Biol.] 147: 673–75. —Analyse expérimentale des facteurs de la morphogenese embryonnaire chez le coléoptère Leptinotarsa. (Chrysomelidae.) [Bull. Biol. France et Belg.] 87: 123–217, ill. **Hannah, A.**—Non-autonomy of yellow in gynandromorphs of Drosophila melanogaster. [78] 123: 523–55. **Hassanein, M. H.**—The influence of infection with Nosema apis on the activities and longevity of the worker honey bee. [20] 40: 418–23. **Havelka, J. & J. Winkler.**—Hysterotely in Graphoderes bilineatus DeGeer. [149] 96: 53–6, ill. **Helias, C. L'.**—Étude des glandes endocrines postcérébrales de la larve d'Apis mellifica. [Bull. Soc. Zool. France] 75: 70–4, ill., 1950. **Hinton, H. E.**—Control by the brain of a diapause hormone secreted by the suboesophageal ganglion. [Sci. Prog.] 41: 679–82. —Digestion of keratin. [Sci. Prog.] 41: 674–79. **Howe, R. W.**—Studies on the family Ptinidae. VIII. The intrinsic rate of increase of some Ptinid beetles. [20] 40: 121–33. The rapid determination of the intrinsic rate of increase of an insect population. *Ibid.* 134–51. **Huard, G. & R. P. Corbe.**—Recherches photometriques sur Parnassus apollo L. [Bull. Soc. Zool. France] 76: 18–21, 1951. **Ito, T.**—Studies on the integument of the silkworm, Bombyx mori. VII. The permeability of the integument to oxygen and carbon dioxide in vivo. [30] 105: 308–15. **Krause, G.**—Die aktionsfolge zur gestaltung des keimstreifs von Tachycines (Saltatoria), insbesondere das morphogenetische konstruktionsbild bei duplicitas parallela. [W. Roux' Archiv] 146: 275–370. **Lal, R.**—Notes on the effect of temperature on the developmental stages of Anopheles subpictus Grassi and Anopheles stephensi Liston. [Ind. J. Ent.] 15: 97–106. **Lees, A. D.**—Environmental factors controlling the evocation of diapause in the fruit tree red spider mite Metatetranychus ulmi Koch (Acarina, Tetranych.). [20] 40: 449–86. —The significance of the light and dark phases in the photoperiodic control of diapause in Tetranychus ulmi Koch. *Ibid.* 487–97. **Lhost, J.**—Sur quelques aspects cytologiques er histochimiques des oenocytes de Forficula auricularia L. imago. [Bull. Soc. Zool. France] 75: 162–63, 1950. **Lord, K. A. & C. Potter.**—Hydrolysis of esters by extracts of insects. [98] 172: 679–81. **Matsumoto, S., T. Yushima & H. Santa.**—Studies on the nondiapause type of the cabbage-armyworm (Barathra brassicae L.). (In Japanese, with Eng. summary.) [109] 8: 89–92, 1952. **O'Farrell, A. F. & A. Stock.**—Regeneration and the moulting cycle in Blatella germanica L. I. Single regeneration initiated during the first instar. [Aust. J. Biol. Sci.] 6: 485–500, ill. **Otuka, M. & H. Santa.**—Studies on the oxygen consumption of the egg and pupal stages of the cabbage army worm (Barathra brassicae L.). [109] 8: 35–40, ill. **Ramsay, J. A.**—Active transport of potassium by the malpighian tubules of insects. [77] 30: 358–69. **Rizki, M. J. M.**—The larval blood cells of Drosophila willistoni. [78] 123: 397–412. **Schneiderman, H. A. & C. M. Williams.**—The physiology of insect diapause. VII. The respiratory metabolism of the Cecropia silkworm during the diapause and development. [30] 105: 320–34, ill. **Slifer, E. H.**—The pattern of specialized heat-sensitive areas on the surface of the body of Acrididae. Part I. The males. [9] 79: 37–68, ill. **Srivastava, M. D. L. & C. C. Das.**—Heteropycnosis in the autosome segments of Ceriagrion coromandelianum (Odonata). [98] 172: 765–66. **Swift, H. & R. Kleinfeld.**—DNA in grasshopper spermatogenesis, oögenesis, and cleavage. [113] 26: 301–11, ill. **Tattersfield, F., J. R. Kerridge & J. Taylor.**—The effects of repeated spraying of insects in increasing their resistance to insecticides. I. [20] 40: 498–522. II. *Ibid.* 523–36. **Uchida, T.**

& S. Masaki.—The effect of low temperature after high temperature treatment upon the induction of diapause in the cabbage army worm moth. (In Japanese with French resume.) [109] 8: 129–34. **Ueno, H.**—Determination of the larval instar of the common cabbage buterfly by means of the measurement of head width. (Japanese, with Eng. summary.] [109] 8: 59–62, 1952. **Watson, M. A. & H. L. Nixon.**—Studies on the feeding of Myzus persicae (Sulz.) on radioactive plants. [20] 40: 537–45. **Wigglesworth, V. B.**—Hormones and the development of hybrid Lepidoptera. [Ent. Record] 65: 244–45. **Yushima, T. & S. Ishii.**—Hydrogen ion concentration and digestive enzymes in the digestive tract of rice stem borer. (Japanese, with Eng. summary.) [109] 8: 51–5, 1952.

ARACHNIDA AND MYRIOPODA—Barnes, R. D.—The ecological distribution of spiders in non-forest maritime communities at Beaufort, North Carolina. [49] 23: 315–37, ill. **Bücherl, W.**—Aranhas do Rio Grande do Sul. (Arachnida.) [Mem. Inst. Butantan] 24: 127–55. **Camin, J. H.**—Observations on the life history and sensory behavior of the snake mite, Ophionyssus natricis (Gervais) (Acarina: Macronyssidae). [Chic. Acad. Sci., Sp. publ.] 10: 1–75, ill. **Chrysanthus, Fr.**—Hearing and stridulation in spiders. [149] 96: 57–83, ill. **Collin, J. & R. M. May.**—Réactions adaptives de tardigrades a des variations de salinité. [Bull. Soc. Zool. France] 75: 184–87, 1950. **Crabill, R. E., Jr.**—A new himantariid from the eastern United States (Chilopoda: Geophilomorpha: Himantariidae). [36] 48: 85–88, ill. **Habeeb, H.**—North American Hydrachnellae, Acari. VI. Three new species of watermites belonging to the genus Aturus. [Nat. Can.] 80: 274–76. **Kaston, B. J. & E. K.**—How to know the spiders. Pictured-keys for determining the more common spiders, with suggestions for collecting and studying them. Wm. C. Brown Co., Dubuque. 220 p., ill. $2.25 paper, $3.00 cloth bound. (Reviewed by L. B. [64] 36: 98.) **Lees, A. D.**—Acarina. (See Anatomy.) **Munchberg, P.**—Vierter beitrag zur kenntnis der im nordamerikanischen raume an odonaten parasitierenden Arrenurus arten (Hydracarina). [158] 82: 47–57, ill. **Pabst, W.**—Zur biologie der mitteleuropaischen troguliden. (Arachnida.) [158] 82: 1–46, ill. **Vachon, M.**—Sur un cas de schistomélie ternaire d'une patte ambulatoire chez le scorpion foussieur Scorpio maurus L. [Bull. Biol. France et Belg.] 87: 218–25, ill.

SMALLER ORDERS—Arvy and Gabe.—(See Anatomy.) **Bayard, A. & M.-L. Verrier.**—Note sur Ecdyonurus lateralis Curtis et la morphologie comparée des Ecdyonuridae (Épheméroptères). [Bull. Soc. Zool. France] 75: 84–90, ill., 1950. **Fraser, F. C.**—The character of the anal vein in Lestoides Tillyard with some remarks on the position of the genus in the order Odonata. [60] 89: 227–30, ill. **Hartwig, E. K.**—Taxonomic studies of South African Thysanoptera, including genitalia, statistics and a revision of Trybom's types. [Ent. Memoirs, S. Afr. Dept. Agr.] 2: 339–499, ill., 1952. **Judd, W. W.**—A collection of feather lice (Mallophaga) from birds in Ontario. [11] 72: 349–50. **Lal, R. & R. D. Menon.**—Isoptera. [Catalogue of Indian Insects] pt. 27, 94 p. Calcutta, Govt. pr. **Mockford, E. L.**—Additional notes on Indiana Psocoptera. [Proc. Indiana Ac. Sci.] 62: 198–99. —Three new species of Archipsocus from Florida (Psocoptera: Archipsocidae). [64] 36: 113–24, ill. (k). **Montgomery, B. E.**—Notes and records of Indiana Odonata, 1951–1952. [Proc. Indiana Ac. Sci.] 62: 200–02. **Pratt, H. D. & H. Karp.**—Notes on the rat lice Polyplax spinulosa (Burmeister) and Hoplopleura oenomydis Ferris. (Anoplura.) [80] 39: 495–504, ill. **Rácenis, J.**—Algunas notas sobre las especies venezolanas del genero Nephepeltia (Odonata: Libellulidae). [5] 1: 133–40, ill. —Una nueva especie del genero Neoneura (Odonata: Protoneuridae) de Venezuela. [5] 1: 155–58, ill. **Seshadri, A. R.**—Observations on Trichinothrips breviceps (Bagnall), a little known predatory thrips from south India. (Thysanoptera.) [Indian J. Agr. Sci.] 23: 27–39, ill. **Srivastava and Das.**—Odonata. (See Anatomy.) **Vaillant, F.**—Les larves de Stactobia MacLachlan (Trichoptères). [Bull. Soc. Zool. France] 76: 205–8, ill., 1951 (k).

ORTHOPTERA — Cloudsley-Thompson, J. L. — (See Anatomy.) **Davey, J. T.**—Possibility of movements of the African migratory locust in the solitary phase and the dynamics of its outbreaks. [98] 172: 720–21. **Dirsh, V. M. & B. P. Uvarov.**—Tree locusts of the genus Anacridium (Acrididae). [61] 29: 7–69, ill. **Dupont-Raabe, M.**—Etude morphologique et cytologique du cerveau de quelques phasmides. [Bull. Soc. Zool. France] 76: 386–97, ill., 1951. **Ebner, R.**—Einige tettigoniiden aus Argentina und Chile. [133] 16: 9–14, ill. (*). **Gurney, A. B.**—Recent advances in the taxonomy and distribution of Grylloblatta. [152] 43: 325–32 (*). **Kevan, D. K. M.**—On the gender of the generic name Ommexecha Serville, 1831, and the correct rendering of the name Chrotogonus homalodemus (Blanchard, 1836) (Acrididae). [60] 89: 221–23. **Lhost, J.**—(See Anatomy.) **O'Farrel and Stock.**—(See Anatomy.) **Rehn, J. A. G.**—The grasshoppers and locusts (Acridoidea) of Australia. Vol. II, Acrididae (Subfamily Pyrgomorphinae). 269 p., 32 pls. Melbourne: Commonw. Sci. & Ind. Res. Organization. **Slifer, E. H.**—(See Anatomy.) **Swift and Kleinfeld.**—(See Anatomy.) **White, M. J. D.**—Multiple sex chromosome mechanisms in the grasshopper genus Paratylotropidia. [15] 87: 237–44, ill.

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LEPIDOPTERA—Clarke, C. A. & P. M. Sheppard.—Further observations on hybrid swallowtails. [Ent. Record] 65: no. 9, Suppl., 12 p., ill. **Clarke, J. F. G.**—Notes, new synonymy, and new assignments in American Gelechiidae. [152] 43: 317–20. **Diakonoff, A.**—Microlepidoptera of New Guinea; results of the Third Archbold Expedition (American-Netherlands Indian Expd. 1938–1939) Pt. 2 [Verh. K. Neder. Akad. Wetens., afd. Natuurk. 2d ser.] 49: no. 3, 166 p., ill. (*). **Fukaya and others.**—(See Anatomy.) **Huard and Corbe.**—(See Anatomy.) **Ito, T.**—(See Anatomy.) **Kimball, C. P.**—A proposed revision of the check-list of Florida Lepidoptera. [64] 36: 103–07. **Kohler, P.**—Nuevas especies de Heterocera. [133] 16: 15–24, ill. **Matsumoto and others.**—(See Anatomy.) **Peters, W.**—A provisional check-list of the butterflies of the Ethiopian region. 201 p. Feltham, Eng., E. W. Classey, 1952. **Schneiderman and Wilson.**—(See Anatomy.) **Uchida and Masaki.**—(See Anatomy.) **Vago, C.**—Septicémie a spirochètes chez les "Vers Courts" de Bombyx mori et son role dans l'étiologie de cette maladie. [Bull. Soc. Zool. France] 75: 201–06, 1950. **Vazquez, G. L.**—Observaciones sobre Papilios de Mexico, con descripciones de algunas formas nuevas; una especie nueva para Mexico y localidades nuevas de algunos otros. Ill. [88] 24: 171–75, ill. **Wigglesworth, V. B.**—(See Anatomy.)

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190–98. **Vaillant, F.**—Un empidide destructeur de simulies. [Bull. Soc. Zool. France] 76: 371–79, ill., 1951. —Notes biologiques sur quelques Tachytrechus d'Afrique (Dolichopodidae). [Bull. Soc. Zool. France] 76: 379–83, ill., 1951. —Les premiers stades de Dolichopus griseipennis Stann. [Bull. Soc. Zool. France] 75: 80–4, ill., 1950. **Weems, H. V. Jr.**—Notes on collecting syrphid flies. [64] 36: 91–8

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List of Titles of Publications Referred to by Numbers in Entomological Literature in Entomological News.

1. Academia Brasileira de Ciencias, Anais. Rio de Janeiro.
2. Académie des Sciences, Comptes Rendus. Paris.
3. Academy of Natural Sciences of Philadelphia. Notulae Naturae.
4. Academy of Natural Sciences of Philadelphia. Proceedings.
5. Acta Biologica Venezuelica. Caracas.
6. Acta Biotheoretica. Leiden, Netherlands.
7. Acta Zoologica (Int. tidskrift för Zoologi). Stockholm.
8. Acta Zoologica Lilloana. Tucuman, Argentina.
9. American Entomological Society, Transactions. Philadelphia.
10. American Journal of Tropical Medicine & Hygiene. Baltimore, Md.
11. American Microscopical Society, Transactions. Menasha, Wisc.
12. American Midland Naturalist. Notre Dame, Ind.
13. American Museum Novitates. New York.
14. American Museum of Natural History, Bulletin. New York.
15. American Naturalist. Lancaster, Pa.
16. Anatomical Record. Philadelphia.
17. Annales de Parasitologie humaine et comparée. Paris.
18. Annales des Sciences Naturelles, Zoologie. Paris.
19. Annals and Magazine of Natural History. London.
20. Annals of Applied Biology. London.
21. Annals of Tropical Medicine and Parasitology. Liverpool.
22. Anti-locust Bulletin. London.
23. Archives de Zoologie Expérimentale et Générale. Paris.
24. Archives de Zoologie Expérimentale et Générale. Notes et Revue.
25. Arkiv för Zoologi. K. Svenska Vetenskapsakademien, Stockholm.
26. Arthropoda. Asoc. Argent. Artropodologia. Buenos Aires.
27. Australian Journal of Zoology. Canberra.
28. Beiträge zur Entomologie (Deutsch. Ent. Inst.) Berlin.
29. Beiträge zur Fauna Perus. Jena.
30. Biological Bulletin. Woods Hole, Mass.
31. Biological Society of Washington, Proceedings. Washington, D. C.
32. Boletin de Entomologia Venezolana. Caracas.
33. Bombay Natural History Society, Journal.
34. Bonner Zoologische Beiträge. Bonn, Germany.
35. British Museum (Nat. Hist.), Bulletin. Entomology.
36. Brooklyn Entomological Society, Bulletin.
37. Broteria, Ser. trimestral. Lisbon, Portugal.
38. Buenos Aires. Instituto Nac. Investig. Ciencias Nat. Zoologica.
39. Bulletin Biologique de la France et de la Belgique. Paris.
40. Bulletin of Entomological Research. London.
41. California Insect Survey, Bulletin. Berkeley, Cal.
42. California Univ. Publications in Entomology. Berkeley.
43. Canadian Entomologist. Ottawa, Ont.
44. Canadian Journal of Zoology. Ottawa, Canada.
45. Ceskoslovenska Spolecnost Ent., Casopis. (Acta Soc. Ent.) Prague.
46. Ceylon Journal of Science, Sect. B. Colombo.
47. Coleopterists' Bulletin. Arlington, Va.
48. Dusenia. Curitiba, Parana, Brazil.
49. Ecological Monographs. Durham, N. C.
50. Ecology. Durham, N. C.
51. Entomologica Americana. Brooklyn Ent. Soc.
52. Entomological Society of America, Annals. Columbus, Ohio.

53. Entomological Society of British Columbia, Proceedings. Vernon.
54. Entomological Society of Ontario, Annual Report. Guelph.
55. Entomological Society of Southern Africa, Journal. Pretoria.
56. Entomological Society of Washington, Proceedings. Washington, D. C.
57. Entomologische Berichten. (Ned. Ent. Ver.) Amsterdam.
58. The Entomologist. London.
59. L'Entomologiste. Paris.
60. Entomologist's Monthly Magazine. London.
61. Eos; Revista Española de Entomologia. Madrid.
62. Evolution. New York.
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68. Harvard Museum of Comparative Zoology, Bulletin. Cambridge, Mass.
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92. Mosquito News. New Brunswick, N. J.
93. Musei Zoologici Polonici, Annales. Warsaw, Poland.
94. Musei Zoologici Polonici. Fragmenta Faunistica. Warsaw, Poland.
95. Naples Univ. Instituto e Museo Zoologico, Annuario.
96. National Academy of Sciences, Proceedings. Washington, D. C.
97. Natural History Miscellanea (Chicago Academy of Sciences).
98. Nature. London.
99. Naturforschende Gesellschaft Zurich, Vierteljahrsschrift.
100. Die Naturwissenschaften. Berlin.
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125. Royal Entomological Society of London, Proceedings, Ser. B.
126. Royal Entomological Society of London, Transactions.
127. Royal Society of London, Proceedings, Ser. B.
128. São Paulo, Brazil. Depart. Zool., Secr. Agr., Papéis Avulsos.
129. São Paulo, Brazil. Instituto Biologico, Arquivos.
130. Schweizerische Entomologische Gesellschaft, Mitteilungen. Bern.
131. Smithsonian Miscellaneous Collections. Washington, D. C.
132. Sociedad Cientifica Argentina, Anales. Buenos Aires.
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134. Sociedad Mexicana de Historia Natural, Revista. Mexico City.
135. Société d'Histoire Naturelle de Toulouse, Bulletin.
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137. Société Entomologique de France, Annales. Paris.
138. Société Entomologique de France, Bulletin. Paris.
139. Société Fouad I d'Entomologie, Bulletin. Cairo, Egypt.
140. Société Linneenne Lyon, Bulletin Mensuel.
141. Société Zoologique de France, Bulletin. Paris.
142. Society for British Entomology, Journal. Bournemouth, England.
143. Society for British Entomology, Transactions. Bournemouth, Eng.
144. South London Entomological & Nat. Hist. Society, Proc. & Trans.
145. Southern California Academy of Sciences, Bulletin. Los Angeles.
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147. Tennessee Academy of Sciences, Journal. Nashville.
148. Texas Journal of Science. College Station, Texas.
149. Tijdschrift voor Entomologie. Amsterdam.
150. Tohoku University. Science Reports, Ser. 4. Tohoku, Japan.
151. U. S. National Museum, Proceedings. Washington, D. C.
152. Washington Academy of Sciences, Journal. Washington, D. C.
153. Wasmann Journal of Biology. San Francisco, Cal.
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This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

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German lepidopterist wishes to correspond and receive live material (eggs and pupae) in exchange for dried imagoes. Johannes Reichel, Koenigsberg, Krs. Wetzlar 16, Germany.

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Bembicini and Stizini (Hym., Sphec.) of New World wanted for revis. study. Will return upon request or at end of project. James E. Gillaspy, Dept. of Zoology, Univ. Texas, Austin 12, Texas.

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Remarks on the Larval Chaetotaxy of the Subgenus Melanoconion (Diptera: Culicidae)

By John N. Belkin, University of California at Los Angeles

The study of the chaetotaxy of culicine mosquito larvae has not attracted many workers in the past, despite the fact that numerous investigators have utilized from time to time some of the elements of the chaetotaxy other than that of the head and distal abdominal segments for the diagnosis of species. The recent contribution (Foote, 1952) on the complete chaetotaxy of the subgenus *Melanoconion* of *Culex* is a welcome addition to the information now being gathered in this field. It is unfortunate that Foote disregarded the earlier work (Belkin, 1951) in which an attempt was made to review the chaetotaxy of mosquito larvae, both anophelines and culicines, and to provide criteria for establishing homologies, and where the complete chaetotaxy of a culicine mosquito was figured. As a result a number of misinterpretations were made in the case of those hairs which do not always occur in a regular numerical sequence, although some changes in nomenclature introduced in Foote's paper were identical with those proposed by Belkin. Further work on the larval chaetotaxy and its homology with the chaetotaxy of the pupa (Belkin, 1952, 1953) has shown that the criteria for homologies and the interpretations proposed by me are generally consistent. Therefore, I wish to point out at this time some of the discrepancies in the interpretations of the chaetotaxy as well as some errors in observations made by Foote. My observations were made largely on *Culex* (*Melanoconion*) *erraticus* (Dyar and Knab), 1905 from Wilson Dam, Alabama.

It is stated by Foote that hair 2 is absent on the head capsule of the subgenus *Melanoconion.* My material shows a small tubercle with a minute bristle at the level and caudad of hair 1, in a position somewhat mesad of the homologous but better developed hair 2 in *Culex quinquefasciatus* Say, 1823, in which hair 3 is also present.

The thoracic chaetotaxy has not been studied comparatively in the culicines and all the present interpretations show glaring discrepancies between segments and with the abdomen, so that no comment can be made at present. On the abdomen, several discrepancies must be pointed out. Despite a statement to the contrary, hair 0 is present in the subgenus on segments II through VIII, as it is apparently in the larvae as well as pupae of all mosquitoes. In the species examined by me it is about one-fifth the length of the pilosity and is located in the usual position. It is figured and labelled by Foote as hair 1 on Segment VIII; on this segment it is considerably larger and more conspicuous. Hair 14 was also missed on segments III to VII and was labelled 13 (cephalic) on segment VIII, on which it is also more conspicuous. It is slightly smaller than hair 0 on the corresponding segments and is found in the normal anterior intersegmental position. On the venter of the abdomen, I question the interpretation of hair 13 on segments III through V. It is much more likely that the hair labelled 13 is actually 11, hair 12 is hair 13 and hair 11 is hair 12. The few pupal hairs of this group that I have seen *in situ* in the fourth instar larva support my interpretation; furthermore hair 13 is almost always well developed. It appears unlikely that Foote's interpretation of hairs 11 and 12 on segment I is correct for in many culicines, perhaps all, hair 11 on this segment is absent in the older instars although it is usually present in the first instar, and hair 13 is always present. One would expect therefore the two hairs to be 12 and 13 on this segment. On segments VII and VIII the interpretations are confused. It appears that some of my interpretations were followed, despite a statement to the contrary, on segment VII as well as elsewhere, while on segment VIII reliance was placed directly on the interpretations of Root (1924), Martini (1929) and Hurlbut (1938). On segment VII, except for failure to identify hairs 0 and 14, the interpretation appears to be correct. On my figures of this segment (Belkin, 1951, fig. 6 and 7) hairs 11 and 12 are labelled incorrectly and the terminology should be reversed. On segment VIII none of Foote's interpretations are in agreement with the preceding segment and all appear incorrect. The first pentad (7) in many sabethines has the same position, as well as degree of development, as hair I of abdomen VII and it can be interpreted as the same hair in anophelines, particularly if the first instar larva is examined (Belkin, 1953). The second pentad (6) is probably hair 5, for it is retained in the pupa and in that stage Knight and Chamberlain (1948) have homologized it with the corresponding hair on the other segments. The third pentad (9) is almost without doubt hair 7; the evidence from the pupal chaetotaxy is quite clear and again in the first instar anopheline larva its position is quite similar to that of the corresponding hair on segment VII. The fourth pentad (11) is in all probability hair 10 as shown by the first instar larva. Finally, the fifth pentad (caudal 13) cannot be hair 13 since it is present in the first instar larva and hair 13 is missing in this stage; it is most probably hair 12 (Belkin, 1953). Since all these homologies are not completely clear, it would be preferable to use the arbitrary terminology, such as proposed by me, particularly since it appears that the first and second pentads are reversed in the culicines as compared to the anophelines. The remaining two hairs on this segment are 0 (1) and 14 (cephalic 13).

REFERENCES

BELKIN, J. N. 1951. A revised nomenclature for the chaetotaxy of the mosquito larva (Diptera, Culicidae). Amer. Midl. Natl. 44: 678–698.

——. 1952. The homology of the chaetotaxy of immature mosquitoes and a revised nomenclature for the chaetotaxy of the pupa (Diptera, Culicidae). Ent. Soc. Wash., Proc. 54: 115–130.

——. 1953. Corrected interpretations of some elements of the abdominal chaetotaxy of the mosquito larva and pupa (Diptera, Culicidae). Ent. Soc. Wash., Proc. *In Press.*

Foote, R. H. 1952. The larval morphology and chaetotaxy of the *Culex* subgenus *Melanoconion* (Diptera, Culicidae). Ent. Soc. Amer., Ann. 45: 445–472.

Hurlbut, H. S. 1938. A study of the larval chaetotaxy of *Anopheles walkeri* Theobald. Amer. J. Hyg. 28: 149–173.

Knight, K. L., and R. W. Chamberlain. 1948. A new nomenclature for the chaetotaxy of the mosquito pupa, based on a comparative study of the genera (Diptera, Culicidae). Helminth. Soc. Wash., Proc. 15: 1–10.

Martini, E. 1923. Über Einige für das System bedeutungsvolle Merkmale der Steckmucken. Zool. Jahrb. Abt. f. System. 46: 517–590.

Root, F. M. 1924. The larval pilotaxy of *Anopheles quadrimaculatus* and *Anopheles punctipennis*. Amer. J. Hyg. 15: 777–784.

Some Observations on Stability and Uniformity in the Nomenclature of Larval Hairs (Diptera: Culicidae)

By Richard H. Foote, Bureau of Entomology and Plant Quarantine, United States Department of Agriculture

One of the most serious problems confronting taxonomists today is the attainment of stability and uniformity in nomenclature. This ideal is slowly and gradually on its way toward realization, but only through a severe process of evolution involving the mutation of ideas and their selection and survival in the population of biologists concerned with the naming of animals. The attainment of the ideal of stability and uniformity in the nomenclature of the various parts of animals is just as desirable, but this must experience a similar process in which the same difficulties are inherent—those of the union of mind and of opinion.

This evolutionary trend has been carried a long way by those biologists who have studied, for instance, the serial homologies of the appendages of a crayfish. Though still not attaining universal acceptance of a single idea, they have agreed upon a more or less universal way of teaching and speaking about their subject. On the other hand, those of us who have been studying the so-called "homologies" of mosquito larval and pupal hairs stand at the threshold of a long and, to some, very discouraging weeding process before general acceptance will ever be attained.

It is not the purpose of this contribution to discuss hair by hair the relative merits of the system of chaetotactic nomenclature proposed by Belkin (1950, 1952, 1953),[1] nor is it necessarily a defense of a somewhat similar system devised by Foote (1952) for the *Culex* subgenus *Melanoconion.* Rather, I should like to discuss several possible pitfalls, the awareness of which should help to guide us more soundly in our choice of any such system for what we commonly term "permanent" use.

We should be particularly careful in our use of the word "homology," in my opinion rather unfortunately employed in the various papers by Belkin and other authors, as well as in one by myself (1952). One of the most commonly employed criteria in the determination of the true homology of two or more structures is the similarity in their embryological and post-embryological development. Our progress in this direction in the study of the larval and pupal hairs of mosquitoes has not yet attained a level where the accumulated volume of observations allows us to employ any such criterion fairly. For instance, the study of first larval instars of a majority of supraspecific groups must certainly be a prerequisite for such a program. Furthermore, attempts to homologize larval with pupal hairs, as exemplified by the work of Baisas and Pagayon (1949),[2] Belkin (1952) and others, although consisting of carefully considered observations, really lack basic research in revealing the true physical and morphogenetic relationships involved. These authors have compared the relative positions and degree of development of larval and pupal hairs simply by observing the latter through the more or less transparent cuticle of the well-developed fourth larval instar. Even though this method of attack represents a distinct step forward, it is at best only suggestive, and the number of interpretations of the data thus gathered can be, and often is, as great as the number of observers. In my study of pupal chaetotaxy in two subgenera of *Culex* (Foote, 1953),[3] the past and current lack of uniformity in the nomenclature of hairs is reflected in a table in which 13 different systems are compared. All of these systems have been proposed since 1920.

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[1] For most references see paper by J. N. Belkin in this issue of Ent. News.

[2] Baisas, F. E., and A. U. Pagayon. 1949. Notes on Philippine mosquitoes. XV. The chaetotaxy of the pupae and larvae of Tripteroides. Philippine Jour. Sci. 78: 42–72.

I have shown (unpublished data) that it is possible to immobilize mosquito larvae and alter the character of the pupal hairs developing under the larval integument by cauterizing the hair-forming areas of the larval cuticle. By using pupal hairs as markers in this way, workers may well evolve data that lie beyond the bounds of dispute. Experiments such as this will place our discussions on a basis that is more than pure speculation, and only then will we begin to resolve the more serious differences of opinion among us.

Those who have used the appendages of the crab and crayfish for their studies of serial homology point to the previous existence of a common ancestor which possessed a long series of very similar biramous appendages. It is believed that these appendages have changed in structure through mutation and selection until relatively large differences in structure from segment to segment have resulted. Again we see that our choice of the word "homology" may not be an apt one, since I believe we have not gone far enough back along the line of descent. In the end we may find an answer to this problem of hair nomenclature in an organism distantly removed from the group rather than in a member of the group itself.

Without doubt, Dr. Belkin has been aware of these and many other pitfalls. His work shows evidence of a careful appraisal of the available information, and doubtlessly he is correct in numbering many of the hairs. The volume of information that he has brought to bear on this problem is much greater than I was able to assemble during the short period of my study of *Melanoconion*. That study was a victim of bad timing in a way, since thesis deadlines were inflexible, and by the time Dr. Belkin's nomenclature was available for use the system that I had devised had already been applied to most of the larval descriptions involved in the taxonomic work. It was designed primarily for use as an urgently needed tool which could be used for these descriptions. I sincerely regret the implications of universality which I may have written into this paper; yet as a tool it served a very useful purpose—to name the hairs of a restricted group of insects. However, it is my sincere hope that, as this nomenclature evolves, workers will devote more time to basic research and experimentation such as has been briefly indicated above. Facts, rather than intuition, should become the basis for our speculation.

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[3] Foote, R. H. 1953. The pupal morphology and chaetotaxy of the Culex Subgenera Melanoconion and Mochlostyrax. Proc. Ent. Soc. Wash. 55: 89–100.

A Modification of Hopkins' Technique for Collecting Ectoparasites from Mammalian Skins [1]

By Edwin F. Cook

In the course of a study on the populations of Anoplura on wild mice Hopkins' (1949)[2] technique of dissolving the hair of the mammalian host skins in caustic potash has been employed. By this means one can readily recover the total louse population of an individual skin. Other procedures that have been employed in the past—brushing, searching and the use of detergents—were considered but discarded; the first two procedures because too many parasites are overlooked and the latter because it is too time-consuming in addition to being unlikely to yield the total population of parasites. A comparison of the searching and brushing technique with the caustic potash method was made by first removing those parasites that could be seen upon a careful examination and then carefully brushing the specimen to remove any additional parasites. Following both of these treatments the skins were dissolved in caustic potash, and in all instances many additional parasites were recovered.

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[1] Paper No. 2981, Scientific Journal Series, Minnesota Agricultural Experiment Station, St. Paul 1, Minn.

[2] Hopkins, G. H. F. 1949. Host associations of the lice of mammals. Proc. Zoo. Soc. London 119: pp. 396–397.

Hopkins' procedure involves initially soaking the skin of the mammalian host in cold 5% KOH for 15 minutes, after which the hair is scraped from the skin and the skin discarded. This particular step is rather tedious and some parasite specimens are likely to be lost by adhering to the skin. With over 400 dried skins to examine in the investigation noted above, the amount of time spent in scraping the hair from the skin became excessive. The following modification was then adopted with excellent results. Further, this procedure eliminates one of the possible sources of error in sampling the population of the ectoparasites. It should be noted, of course, that these results were obtained with the dried skins of small rodents: *Clethrionomys, Microtus* and *Peromyscus.* Whether or not it would be effective with larger animals is uncertain.

Dried skins are cut into small pieces (1 to 2 inches square) and placed in a 125 ml. Erlenmeyer flask with 50 ml. of 3% trypsin (4 × U. S. P. pancreatin) buffered to a pH 8.3 ± with .2 molar Na_2HPO_4. This is placed in an oven at 37° C. for 36 to 48 hrs. Following this initial digesting period, 10 gm. KOH and 50 ml. H_2O are added, and the resulting mixture is boiled for several minutes or until all of the hair and the skin have dissolved. This liquid is then strained through an 80 mesh bronze screen (folded to a conical form). The small amount of debris remaining on the sieve is washed gently with tap water and the screen inverted into a petri dish. The specimens are washed off the screen into the dish by a small stream of water from a washing bottle or the tap. Any parasite specimens still adhering to the screen are found by examination of the screen under a dissecting microscope. The specimens, now in the dish with very little debris, can be readily discerned at 15 × with a dissecting microscope. First instar nymphs of the Anoplura as well as all larger instars are retained completely by the screen. Mites are also recovered by this process; even the Listrophoridae although these are so small that some do pass through the 80 mesh screen. With this modification 20 or 30 skins can be brought through their initial digesting with much less time and effort than that involved in skin scraping, and no lice are lost in the process.

The parasite specimens are largely cleared by this process, and aside from some manipulation to remove the dissolved body contents, they are ready for staining and mounting in appropriate media. Lice and mites prepared in this fashion are undamaged and make excellent mounts. The latter is not the case where prolonged boiling of the skins in caustic potash has been attempted nor where heat and pressure have been used to digest the skins.

A Frigartus from California and an Erythroneura from South Dakota (Homoptera: Cicadellidae)

By Dorothy J. Knull, Department of Zoology and
Entomology, The Ohio State University,
Columbus, Ohio

Frigartus obesus n. sp. Figures 2, 3, 5, 6.

Resembling *Frigartus frigidus* (Ball)* but longer, less robust, and with smaller median spots on vertex and dark basal angles of scutellum.

Robust, cream-colored, marked with black and brown. Head broadly rounded to front, margins almost parallel, a large round spot between ocellus and eye on anterior margin, another comma-shaped, smaller spot either side on apex, small irregular spots and lines along base, eyes dark. Pronotum pale anteriorly, with sparse transverse lines on posterior two-thirds; scutellum pale with a black triangle in each basal angle, and

* Ball, E. D., Ent. News 10: 172, 1899.

small triangular spot either side below median transverse impressed line. Elytral veins broadly pale, cells embrowned, apical cells darker. Below, face pale with seven short arcs either side, sutures and spot above antenna dark.

♂.—Valve short, blunt; plates broader than valve at base, long, narrowing gradually on sides to sharp appressed tips, covering pygofer, twice as long as valve. Inner genitalia as illustrated.

♀.—Last ventral segment longer than preceding, margin straight, slightly excavated on median two- thirds between produced sides.

Length: ♂ 4.1 mm.; ♀ 4.5 mm.

Described from specimens collected in CALIFORNIA by D. J. & J. N. Knull. ♂ *holotype* and 3 ♂ *paratypes, allotype* and 1 ♀ *paratype*, Chester, July 1, 1951; and 1 ♀ *paratype*, Clear Lake, June 18, 1941. Types to be deposited in the Collection of The Ohio State University.

Erythroneura (Erythridula) pura n. sp. Figures 1, 4.

In form of inner ♂ genitalia near *E.* (*E.*) *nitida* Beamer,† but style with a longer, narrower posterior point.

Small, ground color cream on vertex, pronotum and body, of elytra white; color markings scarlet. Vertex with inverted V not touching eyes, narrower at apex; continued across pronotum as broad, slightly diverging irregular vittae reaching both margins; scutellum white, basal angles narrowly outlined with orange except basally, and apex orange; claval stripe broad in basal two-thirds, narrowly following suture in apical third to apex, corial vitta narrow, costal margin orange-tinged before plaque, apices slightly smoky.

Inner ♂ genitalia as illustrated.

Length: ♂ 2.6 mm.; ♀ 2.7 mm.

A large series, ♂ *holotype, allotype* and *paratypes* of both sexes collected in SOUTH DAKOTA by Dr. H. C. Severin at Spearfish, Sept. 10, 1948. Other paratypes from Badlands, Wall, July 26, 1948; Elk Point, Sept. 14, 1948; Ft. Pierre, June

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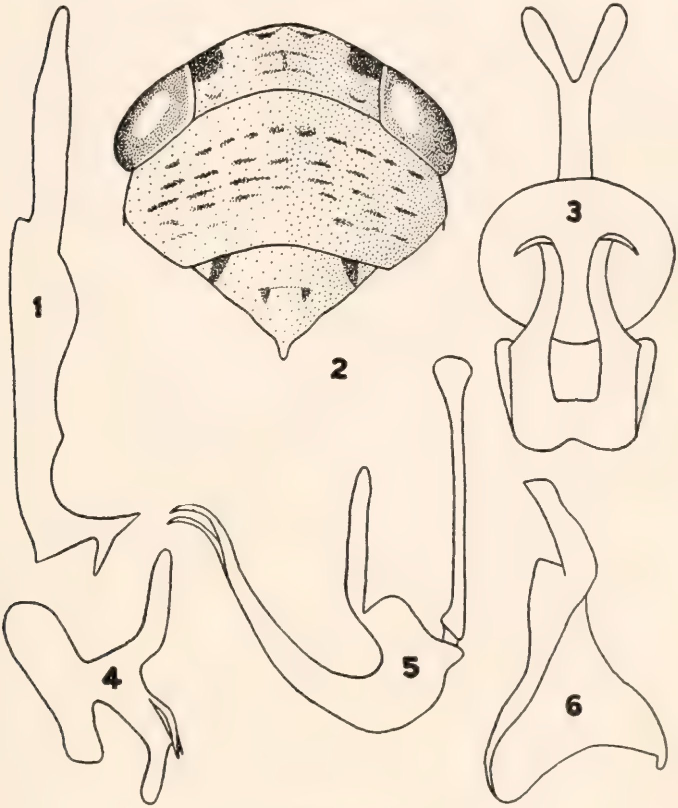
† BEAMER, R. H., Journ. Kans. Ent. Soc. 8: 103, 1935.

17, 1947 and Aug. 6, 1948; Hot Springs, Sept. 11, 1948; Lead, Sept. 11, 1948; Martin, Sept. 11, 1948; Springfield, Sept. 18, 1948. Holotype, allotype and paratypes in collection of writer, paratypes to be deposited in collections of Dr. Severin and The Ohio State University.



FIGURES 1–6

1. *Erythroneura* (*Erythridula*) *pura* n. sp., lateral view of style. 2. *Frigartus obesus* n. sp., head, pronotum, scutellum. 3. *Frigartus obesus* n. sp., ventral view of aedeagus. 4. *Erythroneura* (*Erythridula*) *pura* n. sp., lateral view of aedeagus. 5. *Frigartus obesus* n. sp., lateral view of aedeagus. 6. *Frigartus obesus* n. sp. style.

Concerning the True Identity of Strigamia fulva Sager and Strigamia bothriopa Wood (Chilopoda: Geophilomorpha: Dignathodontidae)

By Ralph E. Crabill, Jr., Department of Entomology of Cornell University, Ithaca, New York

In a way it is not surprising that *fulva* has been confused with *bothriopa* for so many years considering the disorder that has always enveloped the genus and the nebulous beginning of *fulva* in 1856. In that year Sager published a very short paper wherein he described several millipedes and a single chilopod, *Strigamia fulva,* which he characterized very superficially even for his era. The next person to refer to *fulva* was H. C. Wood, who, in 1862, published a redescription of it and repeated that diagnosis in 1865. Although Wood's characterization leaves much to the imagination, he at least noted the number of legs and the distinctive prehensorial basal tooth and, like Sagar, assigned it to Gray's *Strigamia.* There can be little doubt that he had examined the typical series in Philadelphia. In 1862 Wood also described another new species, *Strigamia bothriopa* from Philadelphia, a form which he obviously considered sufficiently distinct from Sager's *fulva* to justify his according it specific rank. He noted that it was "bright red" and robust, whereas *fulva* was yellowish-orange and "a graceful little animal."

In 1886 Meinert, working at the Museum of Comparative Zoology at Harvard University, hesitatingly regarded the two forms as conspecific, but, surprisingly enough, his solution was to recognize *bothriopa* as valid and to place *fulva* in that species' synonymy, at the same time transferring both to *Scolioplanes* of which he was co-author. His action probably influenced Bollman for, when the latter's notes were published posthumously in 1893, he had included *bothriopa* in the synonymy of *fulva* and had referred both to Koch's 1847 genus *Linotaenia.* It is likely that the action taken by these two workers has influenced all subsequnt investigators down to the present time.

In 1896 O. F. Cook declared that he was unable to separate

Meinert's *robusta* from Sager's *fulva,* but it is clear that he considered *bothriopa*[1] conspecific with *fulva.* In the same article he suggested that considerable intraspecific variability must be taken into account; undoubtedly he attributed the larger size, pronounced robustness, crimson color, and so on of *robusta* [= *bothriopa*] to be the normal variation one might expect in the two forms that he considered referable to *fulva.* In 1912 Chamberlin again synonymized Wood's species with *fulva.* He discussed and figured what he took to be the true *fulva,* but from the information presented in the article I believe that he was actually dealing with specimens of *bothriopa.* The plethora of references to *fulva,* with its supposed synonym, *bothriopa,* in the writings of both American and continental authors since Bollman's time, together with the apparent rarity of the true *fulva* and its subtle but unquestionable morphological lack of conformity with those forms properly referable to *bothriopa* have perpetuated the erroneous Meinert-Bollman synonymical precedent.

It is possible to show, however, that the two forms are by no means conspecific. I have examined the typical series of *fulva,* which, through the faithful care accorded it by the staff of the Academy of Natural Sciences of Philadelphia for nearly a century, is still in excellent condition. These specimens were found to conform to the diagnosis presented here.

The most striking characteristic of *fulva* is the presence of more than the usual four preclypeal setae, a feature detected in none of the American or European congeners that I have examined.

Strigamia fulva Sager

Strigamia fulva Sager, Proc. Acad. Nat. Sci. Phila., VIII, p. 109, (1856).
Scolioplanes bothriopus (Wood),—Meinert, Proc. Amer. Phil. Soc., XXIII, p. 222, (1886).
Strigamia bothriopa Wood,—Bollman, Proc. U. S. Nat. Mus., XI, p. 341, (1888).
Linotaenia fulva (Sager),—Bollman, Proc. U. S. Nat. Mus., XI, p. 341, (1888).

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[1] Amer. Natural., XXX, pp. 239–242 (1896).

Tomotaenia fulva (Wood),—Cook, Amer. Natural., XXIX, p. 866, (1895).
Linotaenia bothriopa (Wood),—Chamberlin, Bull. Mus. Comp. Zool. Harv., LIV, p. 409, (1912).
Linotaenia robusta (Meinert),—Chamberlin, Bull. Mus. Comp. Zool. Harv., LIV, p. 409, (1912).
Scolioplanes fulvus (Sager),—Attems, Tierreich, LII, p. 228, (1929).
Scolioplanes bothriopus (Wood),—Attems, Tierreich, LII, p. 228, (1929).

This species may be readily distinguished from all other eastern North American forms by its possession of a laterally divided ultimate pedal pretergite and by the preclypeal setae which always number more than the customary four.

Specific Diagnosis. Length: to 40 mm., most specimens averaging 30–35 mm. *Color:* fulvous in life and in alcohol, infrequently with a faint pinkish tinge anteriorly and posteriorly, never uniformly pinkish nor crimson. *Pilosity:* relatively densely pilose, reflecting the habitus characteristic, apparently, of most American, Asiatic and only a few European forms. *Antennae:* ultimate article distinctly longer than the penultimate. *Preclypeal setae:* 14–16 in number, approximately equidistant and regularly disposed along the anterior margin of the clypeus, (fig. 9). *Labrum:* midpiece weakly sclerotized, the pale teeth detected with difficulty, (fig. 4), the whole contrasting noticeably with the strongly sclerotized and deeply pigmented epipharynx. *First maxillae:* telopodite lappets completely lacking.[2] *Prehensorial segment:* prosternum broad and short, uniformly or almost uniformly fulvous; ungula rather short, weakly curved, basal tooth thumb-shaped or conical, not subquadrate, (fig. 2); poison calyx[3] strictly cordiform, typically slightly longer than wide, (fig. 5). *Ultimate pedal segment:* with distinct lateral sutures, each separating the pretergite

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[2] *Strigamia chionophila* Wood, a widespread American form, is distinctive in possessing two definite pairs of lappets which often escape detection unless they are suitably stained.

[3] The poison calyx is the expanded sclerotized proximal terminus of the poison canal; the entire apparatus is readily seen in macerated specimens.

from its pleurites, (fig. 10) ; coxopleural pores numbering some 8–12, the majority large. *Pedal segments:* 47–53.

Distribution. From the foregoing discussion it must be clear that many of the records attributed to *fulva* probably were based upon specimens of *bothriopa,* which is by far the commoner of the two species. The following records, therefore, are only those for which I can personally vouch: CONNECTICUT: Mt. Higby Reservoir, Hartford county! NEW YORK: Ithaca! (many specimens) ; Watkins Glen! Elmira! Taughannock Falls State Park! The typical locality is unknown; possibly it is in the state of Pennsylvania. Wood, who was familiar with the types, reported the species from Pennsylvania and Illinois, but this information should not be considered absolutely trustworthy.

Strigamia bothriopa Wood

Strigamia bothriopa Wood, Journ. Acad. Nat. Sci. Phila. (n.s.) V, p. 46, (1862). [western Pennsylvania].
Strigamia flava Sayer [*sic*],—Meinert, Proc. Amer. Phil. Soc., XXIII, p. 222, (1886). [*lapsus calami* for *S. fulva* Sager].
Scolioplanes bothriopus (Wood),—Meinert, Proc. Amer. Phil. Soc., XXIII, p. 222, (1886).
? *Scolioplanes robustus* Meinert, Proc. Amer. Phil. Soc., XXIII, p. 224, (1886).
Linotaenia bothriopa (Wood),—Bollman, Ent. Amer., IV, p. 4, (1888).
? *Linotaenia robusta* (Meinert),—Bollman, Ent. Amer., IV, p. 4, (1888).
Tomotaenia bothriopa (Wood),—Cook, Amer. Natural., XXIX, p. 866, (1895).

Unlike *fulva, bothriopa* has but four preclypeal setae and a non-suturate ultimate pedal pretergite; in addition *bothriopa* is sordid red in life and brilliant crimson in alcohol, whereas *fulva* is usually yellowish-orange or at most faintly pinkish anteriorly and posteriorly. The southern *bidens* Wood possesses 65–81 pairs of legs and so contrasts conveniently with bothriopa which bears fewer pairs of legs. The color of the prosternum and the shape of both the prehensorial basal tooth and of the poison calyx are also notably different in the two species. Like that of *bothriopa* the ultimate pedal pretergite of *bidens* is undivided laterally as are those of the European species *acuminata* (Leach) and *crassipes* (C. L. Koch) to which *bothriopa* bears a superficial resemblance. However, *bothriopa* lacks the conspicuous elongate sternital sulci of *crassipes* (best seen in cleared material), and it also differs from the evidently closely allied *acuminata* in a number of subtle characters. The ultimate antennal article of *bothriopa* is markedly broader and longer than the penultimate one, but the two are of about the same breadth and length in the Leach forms that I have examined. The number of pairs of legs is higher in *bothriopa* (47–53) than in *acuminata* (33–47). The legs and sternites of *bothriopa,* like those of the Asiatic *hirsutipes* (Attems), are relatively densely clothed with long setae, whereas those of *acuminata* are sparsely, shortly setose. Very distinctive is the difference in labral midpieces. That of the American form is relatively weakly sclerotized; its fimbriae appear very pale and are almost invisible unless stained with mercurochrome or acid-fuchsin. The labral midpiece of *acuminata,* (fig. 1), on the other hand, is well sclerotized and distinctly pigmented; its fimbriae are relatively strong and rather short.

Specific Diagnosis. Length: to 60 mm., averaging 40–50 mm. *Color:* in life sordid red, changing rapidly to brilliant crimson in alcohol, thereafter becoming sordid reddish-brown. *Pilosity:* relatively densely setose, especially the legs and sternites. *Antennae:* ultimate article much broader and considerably longer than the penultimate. *Preclypeal setae:* always four in number, medially situated, (fig. 7). *Labrum:* rela-

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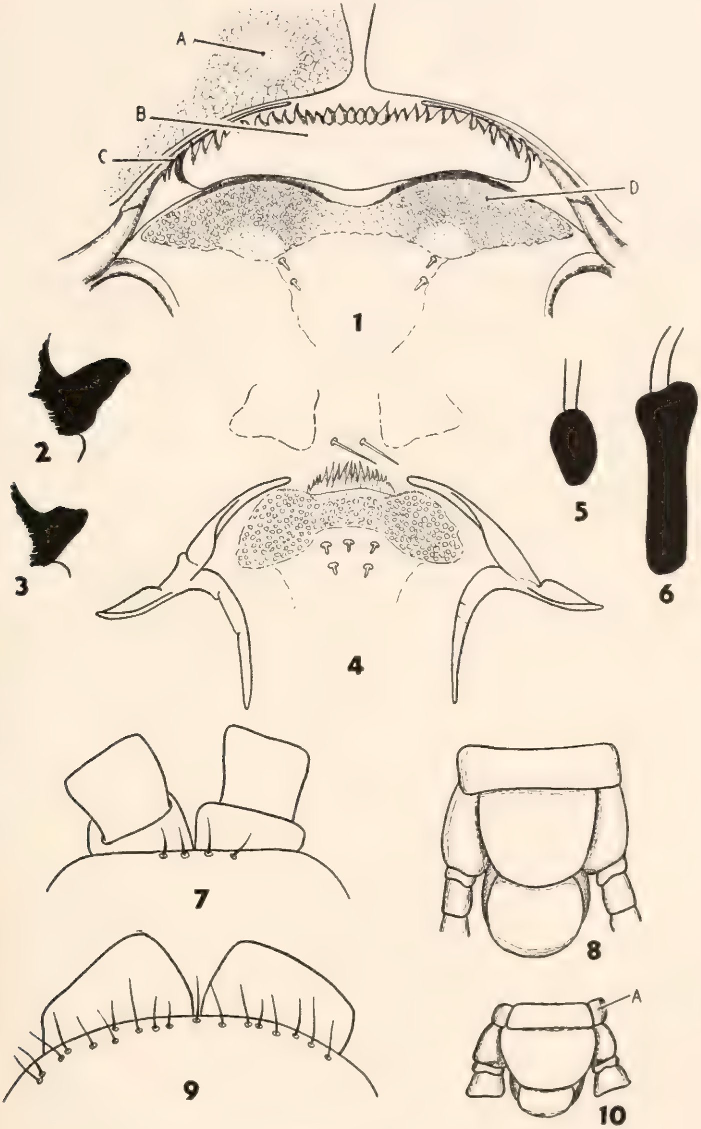
EXPLANATION OF FIGURES

1. *Strigamia acuminata* (Leach). Labrum. A. clypeal consolidated area, B. midpiece, C. side-piece, D. epipharynx. 2. *S. fulva* Sager. Right prehensorial basal tooth. 3. *S. bothriopa* Wood. Right prehensorial basal tooth. 4. *S. fulva* Sager. Labrum. 5. *S. fulva* Sager. Prehensorial poison calyx. 6. *S. bothriopa* Wood. Prehensorial poison calyx. 7. *S. fulva* Sager. Anterior margin of clypeus showing the four preclypeal setae. 8. *S. bothriopa* Wood. Ultimate pedal and post-pedal segments of a female (dorsal). 9. *S. bothriopa* Wood. Anterior margin of clypeus showing the numerous preclypeal setae. 10. *S. fulva* Sager. Ultimate pedal and post-pedal segments of a male. A. pleurite separated from pretergite (dorsal).



FIGS. 1–10.

tively weakly sclerotized, thus differing markedly from those of *acuminata* and *crassipes*. *First maxillae:* telopodite lappets absent or at most represented by barely perceptible and weakly pilose swellings. *Prehensorial segment:* prosternum very broad and short, reddish except for an elliptical anterio-medial white area which may at times be weakly bilobed posteriorly; ungula rather weakly curved, relatively short, evenly attenuate, basal tooth subquadrate, blunt and broad, (fig. 3); poison calyx very long and thin, its upper fifth abruptly expanded, (fig. 6). *Ultimate pedal segment:* pretergite without lateral sutures, fused completely with its pleurites, (fig. 8); coxopleural pores numbering some 20–40, all small. *Pedal segments:* 47–53.

Distribution. Because this species has long been confused with *fulva* I have cited only those distributional records that I consider reliable. MASSACHUSETTS. NEW YORK: West Danby! Ithaca! Robert Treman State Park! Taughannock Falls State Park! Slatersville! Lloyd-Cornell Reserve! Lisle Center! Ringwood Wild Flower Preserve! Steuben county! PENNSYLVANIA: "western Pennsylvania." VIRGINIA: Clifton Forge! Yorktown! Charlottesville! Griffith! Riceville! Lowmoor! Mt. Rogers, Grayson county! Jordan Mines! KENTUCKY: Louisville! INDIANA: Upland! Bloomington; Boswell; LaFayette; Westfield; Greencastle; Salem; Brookville; New Providence; Wyandotte.

Current Entomological Literature

Compiled by **VENIA T. PHILLIPS**, Librarian

Academy of Natural Sciences of Philadelphia

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania pertaining to entomology, including all arthropods except Crustacea. Coverage will be world-wide as regards major contributions to systematics as well as for all papers on morphology, physiology, embryology, etc. In addition, for species from the Americas and the Pacific (Nearctic, Neotropical and Polynesian regions) all minor contributions to taxonomy, distribution, etc., will also be recorded.

This list gives references of the year 1953 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

GENERAL—Argentina. Minis. Ejército de la Nación. Dir. General de Sanidad.—Primeras jornadas entomoepidemiológicas nacionales. [133] 16: 48. **Hickin, N. E.**—An aquatic larva, suitable for laboratory work. [98] 172: 874.

BIOGRAPHIES, OBITUARIES—Attems, Carl, 1868–1952.—Obituary with biobibliography by E. Dartevelle. [Annales Mus. Roy. Congo Belge, Tervuren. Sci. zool., sér. in 8°] 18: vii–xii, (1952.) 1953. **Boerner, Carl, 1880–1953.**—Obituary by W. Roepke. [57] 14: 381–82. **Moral Romero, Jose Dario,** 1885–1941.—Biography by R. Leví-Castillo. [Rev. Ecuator. Ent. y Parasit.] 1: 7–9, port.

ANATOMY, PHYSIOLOGY, MEDICAL—Barber, S. B.—Action potential activity of Limulus chemoreceptor nerve fibers. [16] 117: 587. (Abstract.) **Bodenstein, D.**—Studies on the humoral mechanisms in growth and metamorphosis of the cockroach Periplaneta americana. III. Humoral effects on metabolism. [78] 124: 105–16. **Bodine, J. H. & C. Norman.**—A quantitative study of the distribution of sulphydryl groups during development. [16] 117: 519. (Abstract.) **Boistel, J. & E. Coraboef.**—L'activité électrique dans l'antenne isolée de lépidoptère au cours de l'étude de l'olfaction. [Compt. rend. Soc. Biol. Paris] 147: 1172–75, ill. **Brown, F. K., E. W. Hartung & D. M. Levine**—The nature of so-called "melanotic tumors" in several strains of Drosophila melanogaster. [16] 117: 527. (Abstract.) **Browning, T. O.**—The influence of temperature and moisture on the uptake and loss of water in the eggs of Gryllus commodus (Orthop., Gryllidae). [77] 30: 104–15. **Buck, J., M. Keister & H. Specht.**—Discontinuous respiration in diapausing Agapema pupae. [16] 117: 541. (Abstract.) **Bucklin, D. H.**—Termination of diapause in grasshoppers cultured in vitro. [16] 117: 539. (Abstract.)—Patterns of development in the compound eye of the grasshopper embryo. *Ibid.* 573. (Abstract.) **Canning, E. U.**—A new microsporidian, Nosema locustae n. sp., from the fat body of the African migratory locust, Locusta migratoria migratorioides R. & F. [112] 43: 287–90, ill. **Clark, A. M.**—The mutagenic activity of dyes in Drosophila melanogaster. [15] 87: 295–305, ill. **Ellis, P. E.**—The gregarious behavior of marching Locusta migratoria migratorioides R. & F. hoppers. [77] 30: 214–34. **Ewer, D. W. & S. H. Ripley**—On certain properties of the flight muscles of Orthoptera. [77] 30: 170–77. **Fox, H. M. & J. Sidney**—The influence of dissolved oxygen on the respiratory movements of caddis larvae. [77] 30: 235–37. **Fröbrich, G.**—Darstellung von konzentraten des tribolium-image-faktors (T I F) und seine vermutliche chemische natur. [100] 40: 344. **Gese, E. C.**—Embryogeny of the Japanese beetle, Popillia japonica Newman, and a correlation of morphological events with known physiological changes. [16] 117: 572. (Abstract.) **Harnisch, O.**—Peroxidbestimmungen an larven von Chironomus thummi in aerobiose und anaerobiose. [100] 40: 345. **Hartung, E. W.**—Certain plant growth stimulators as causative agents in the aggregation of tumorous masses in Drosophila melanogaster. [16] 117: 626. (Abstract.) **& D. Herman.**—Culture age as a factor influencing tumorous aggregations in Drosophila melanogaster. *Ibid.* 627. (Abstract.) **Harvey, W. R. & C. M. Williams.**—Changes in the cyanide sensitivity of the heart-beat of the Cecropia silkworm during the course of metamorphosis. [16] 117: 544. (Abstract.) **Hovanitz, W.**—Natural hybridization in Eurasiatic Colias hyale and C. croceus. [16] 117: 647. (Abstract.) **Hoyle, G.**—Potassium ions and insect nerve muscle. [77] 30: 121–35. **Johnson, B.**—Flight muscle autolysis and reproduction in aphids. [98] 172: 813. **Kato, M.**—The metabolism of niacin in insects. [Science] 118: 654. **Ketchel, M. M. & C. M. Williams.**—Isolation of the intracellular symbiont of the roach. [16] 117: 650. (Abstract.) **Lefevre, G., Jr. & F. J. Ratty.**—A constructive genetic effect of X-rays in Drosophila melanogaster. [16] 117: 647. (Abstract.) **Leston, D.**—Phloeidae Dallas: systematics and morphology, with remarks on the phylogeny of Pentatomoidea Leach and upon the position of Serbana Distant. [117] 13: 121–40. **Lüdtke, H. & H. Hopp**—Ueber gewebschäden bei Pediculus vestimenti nach einwirkung chlorierter kohlenwasserstoffe (DDT, HCC, Matacid). [100] 40: 346–47. **McElroy, W. D.**—Biochemistry of firefly luminescence. [16] 117: 593–94. (Abstract.) **Nabours, R. K. & F. M. Stebbins**—Dimorphism of wing-pronotal lengths and teratoses in biparental and partheno-propagation of the grouse locusts (Tetrigidae). [78] 124: 1–30. **Niethammer, G.**—Tiergeographie (Bericht über die Jahre 1943—1949). [Fortschritte der Zool.] 9: 368–421, 1952. **Pappenheimer, A. M., Jr. & C. M. Williams**—The properties of cytochrome E in the Cecropia silkworm. [16] 117: 543. (Abstract.) **Ramsay, J. A.**—Exchanges of sodium and potassium in mosquito larvae. [77] 30: 79–89. **Salkeld, E. H. & C. Potter.**—The effect of the age and stage of development of insect eggs on their resistance to insecticides. [40] 44: 527–80. **Saxena, P. N.**—The digestive system of the firefly, Luciola gorhami Ritsema (Lampyridae). [155] 6: 125–29, ill. **Schneiderman, H. A.**—The discontinuous release of carbon dioxide by diapausing pupal insects. [16] 117: 540. (Abstract.) **& C. M. Williams.**—Metabolic effects of localized injury to the integument of the Cecropia silkworm. [16] 117: 640. 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MARCH 1954

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ENTOMOLOGICAL NEWS

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The Distribution Centers of the Melanoplini (Orthoptera; Acrididae; Cyrtacanthacridinae)

By James A. G. Rehn, The Academy of Natural Sciences of Philadelphia

Since the days of Eduard Suess it has been orthodox to ascribe to an Angaran center the role of a *locus communis* for an overwhelming percentage of the elements of the Holarctic biota. While in many cases this may, and probably does, provide an explanation of what has taken place, in others, where it has been assumed to be a basic postulate which perforce must be accepted, this theory can have value only if it is supported by the weight of known evidence.

In vertebrate paleontology this type of evidence is now so increasingly comprehensive that those who consider faunistic histories or movements in any group, must acquaint themselves with at least some of the broad conclusions which have been drawn, particularly in the past few decades, from the steadily augmenting amount of mammalian evidence. While it has long seemed fashionable to ascribe a very secondary role to the Nearctic region as a biotic evolutionary center, and to credit the Palearctic with a markedly predominating one in the evolution of the Holarctic biota, this latter is occasionally refuted by fossil evidence. The migrations of whole groups of mammals, or their regional extinction, are, as with the camels and tapirs, sometimes made clearly evident by this record. Admittedly this mammalian evidence is almost entirely Caenozoic in coverage, and in considerable part late Caenozoic, but many tribes of insects are probably no older, and it is important for all entomologists who discuss faunal histories to consider what fellow-workers have ascertained in regard to other animals. Also, when we have little or no fossil evidence for the group from which to reason, we must turn to our knowledge of the existing fauna, and see what we may learn from it.

To digress momentarily, however, in the constant stressing of the role of Angara in biotic history, little attention is given to that similarly ancient, and much larger, part of North America called Laurentia by geologists. To quote Suess himself:[1] "That vast region of North America which is formed of ancient rocks overlain by horizontal Cambrian sediments has received the name of Laurentia. It comprises the whole of the Canadian shield, but if we are to regard it as a tectonic unit, we must include the whole of the flat-bedded superstructure up to some natural boundary. Such a boundary is presented by the Rocky Mountains, the United States chain, and, for nearly their whole length, the Appalachians also. The Colorado plateau, a fragment of table land, bounded on the east by the southern branches of the Rocky Mountains, ought also, perhaps, be regarded as a part of Laurentia." Further (p. 257) he adds: "Laurentia extends from south Texas to the Arctic Ocean through 53 or 54 degrees of latitude, and from the mouth of the Mackenzie to the east coast of Greenland through more than 110 degrees of longitude. . . . Laurentia is a very ancient unit. *It behaves towards all the younger folds as a foreland* [his italics]."

Of the Nearctic acridid fauna the most numerous in species, and often so areally in individuals of different species as well, is the tribe to which the name Melanoplini has warrantedly been applied.[2] Long known as the Podismae (or Podismini), from one of its Old World genera, which is also now found to have a single representative in the Nearctic Region (*P. hesperus* (Hebard)[3]), this assemblage has, in the Old World, components distributed over Eurasia from western Europe to China, Korea and Japan, and from subarctic districts to the mountains of southern Europe, the Himalayas, Formosa and Tonkin. Within this great area it breaks up into a number of genera, although it is also unrepresented over extensive sections of the Palearctic Region, and apparently does not penetrate peninsular India, Burma or Indo-Malaya, and in Indo-China reaches only to Tonkin. All we know of the paleontological history of the tribe is that two existing species, representing two genera (*Miramella* and *Bohemanella*), occur in the Pleistocene of Starunia, in the Polish Carpathians.[4]

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[1] "The Face of the Earth" (English translation of the classic "Das Antlitz der Erde"), IV, pp. 251 and 257.

[2] See ROBERTS, Proc. Acad. Nat. Sci. Phila., XCIX, p. 202 (1947).

[3] See REHN and REHN, Trans. Amer. Entom. Soc., LXV, p. 88 (1939).

In the New World we find members of the Melanoplini extending over a far greater extent of latitude than in the Old World, from the Arctic Circle to at least south-central Argentina and Chile, or well over one hundred degrees of latitude, reaching upwards to arctic alpine or paramo conditions in the Rocky Mountains, the Sierra Nevada, the great Mexican volcanoes, the main Andes, the Sierra Nevada de Santa Marta of Colombia and in the Venezuelan Andes. The sole area in the hemisphere, within these bounds, where they are unrepresented is the Amazonian lowland, an area where numerous other groups, elsewhere widely distributed in South America, are also absent. While as yet not critically studied and hence unreported the tribe is also represented by brachypterous material in my hands from mountain areas of certain of the Greater Antilles. This last fact, alone, is conclusive evidence that their arrival in Antillia was by no means recent. In North America members of the tribe are present virtually everywhere south of the Arctic barren grounds, even in the most extreme deserts and also under arctic alpine conditions, thus exhibiting in that part of the world an adaptability which predicates long association and adjustment, even where it has meant retreat and advance over the greatest area in the world now exposed which was subject to repeated Pleistocene glaciation. In passing it may be pointed out that no Palearctic member of the Podismini is known to occur in true deserts.

The distinguished French orthopterist Dr. Lucien Chopard, in his classic work on the biology of the Orthoptera,[5] dismisses the origin of *Melanoplus,* the dominant North American genus of the Melanoplini, with the following: "il semble certain que le premier [i.e., *Melanoplus*] est d'origine asiatique." In an earlier study [6] Chopard had reached certain conclusions regarding the development of centers of speciation of that genus in the United States which, unfortunately, do not correctly interpret the evidence he was summarizing, this latter very largely drawn from the researches of certain contemporary American orthopterists, of whom the writer was quoted as one. This aspect of the subject will be commented upon elsewhere.

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[4] See Zeuner, Starunia, 3, pp. 9–11 (1934); Ann. and Mag. Nat. Hist. (11) VIII, p. 513 (1941).

In the Old World we find the Melanoplini showing marked radiative or development centers in the following areas: (1) the Pyrenees and other mountains of Spain, the Alps, the Italian mountains, the Carpathians and the mountains of all of the Balkan Peninsula and Greece; (2) the Caucasus; (3) the Amur (or Ussuri) region of eastern Siberia, the mountains of China, Japan, Formosa and the Himalayas. Glaciation was undoubtedly a factor which made certain of these various component districts subsidiary evolutionary centers. While species occur in the intervening territories, the above mentioned units would appear to be the centers of marked diversity or most pronounced individuality of types. No member of the tribe occurs in the Palearctic portion of Africa or in Iran, while representation in Anatolia is very limited.

In the New World there are three comparable major evolutionary centers for the Melanoplini, between each of which are areas where the tribe is sparsely represented, but, as already stated, it is absent, within the overall encompassing boundaries, only from the markedly tropical lowlands of Amazonia. The first of these evolutionary centers covers Canada (with Alaska), the United States and Mexico north of the Isthmus of Tehuantepec. The second is in the Venezuelan Andes and adjacent, chiefly montane, areas in northern and eastern Colombia. The third covers that portion of South America from approximately 15° south latitude southward to south-central Argentina and Chile, with certain elements reaching somewhat to the northward in the Peruvian and Ecuadorian Andes. But two genera bridge the gap in Central America, these being *Aidemona* and *Trigonophymus,* the former of which ranges from the southwestern United States to Colombia, while the latter is an intrusive type from its area of maximum development in southern South America. Our knowledge of the geological and hydrographic history of Central America makes reasonably clear why this break is present, and which *Aidemona,* clearly from the north, and *Trigonophymus,* as certainly from the south, have crossed possibly in late Caenozoic times. The geological history of northeastern Colombia and northwestern Venezuela is complex, and has been summarized by Schuchert.[7] The relative antiquity of the tableland of eastern and central Brazil is well known, and its probable role as a radiative evolutionary center for the third, more austral, aggregation is a logical conclusion.

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[5] "Le Biologie des Orthoptères." By LUCIEN CHOPARD. Paris. 1938. [Reference is made to page 14.]

[6] "La faune des Orthoptères des montagnes des Etats Unis et ses rapports avec la faune palearctique." Société de Biogéographie. Paris. 1928. 8 pp.

Analyzing the recognized generic components of the Melanoplini we find that 27 genera occur in Eurasia, of which one is regarded by Ramme as a synonym of another so included, and of these three, i.e., *Podisma, Zubovskya* and *Bohemanella,* are also present in the Nearctic, while from the Nearctic and the Neotropical together we know at present 59 genera, of which but three—above-mentioned—also occur in the Old World. Only *Aidemona, Trigonophymus* (but two species outside of the most southern center[8]) and *Propedies* (but one species outside the same area[9]) occur in more than one of the three radiative areas above outlined, and of these *Trigonophymus* is the sole one present in all three, and in the largest and most important of these it occurs only in the mountains of central and southern Mexico. Turning to the number of species and subspecies known, as a possible index to evolutionary complexity, and conservatively basing the count on those now regarded as valid by workers most familiar with the respective faunas, we find a maximum of 83 species or subspecies in the Palearctic Region, while the Nearctic and Neotropical representation comprises at least 471 species or subspecies.

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[7] "Historical Geology of the Antillean-Caribbean Region." 1935. [Pages 624–695 treat of Colombia and Venezuela.]

[8] *T. punctulatus* and *T. notatus,* the former reaching northward to Costa Rica, the latter solely Mexican.

[9] *P. minutus* Roberts, from Curaçao. The latter island is regarded as part of the Coast Range or Caribbean Andes of northward Venezuela. See Schuchert, idem, p. 678.

In the Palearctic and impinging Oriental regions we find definite localization of most of the genera, with the largest numbers of these found in what may roughly be termed the Mediterranean-Alpine-Balkan montane center (6 genera), northeastern Asia with Korea and Japan (6), southeastern Asia (exclusive of the Himalayan subregion) (6) and the Himalayas and the Caucasus each with 2 (these endemics). Those of relatively broad distribution in the Palearctic are few (4), and, of these, two (*Podisma* and *Bohemanella*) are shared with the Nearctic. However, there is no single area in the Palearctic Region, even of great size, which could be regarded as the outstanding evolutionary center of the Melanoplini, on the basis of number of genera or of species or subspecies there occurring at present. The greatest diversity specifically is found in the Mediterranean-Alpine-Balkan center, but the number of genera there represented is relatively low (vide supra).

In the New World 40 genera occur north of the Isthmus of Tehuantepec, this total exclusive of three shared with the Old World and two with areas to the southward; the Colombian-Venezuelan center has four genera plus *Propedies* which it shares with more austral America and *Aidemona* and *Trigonophymus* with more northern regions; while the Brazilian-Argentine center holds eight peculiar genera plus *Propedies* shared with the Colombian-Venezuelan one, and *Trigonophymus* with both of the other New World centers. Samplings of the number of genera present in representative areas of the North American-Mexican center alone give us the following figures: New Jersey and Pennsylvania 6, North Carolina 5, Florida 6, Montana 7, Colorado 8, Texas 13, Washington and Oregon 8, California 7, Arizona 7. The number of individual genera involved in these sample tabulations (all within the United States alone) totals 32, or five more than all known from the entire sweep of Eurasia.

It is conceivable that genera such as *Podisma* and *Zubovskya* have entered the Nearctic from the Palearctic at a relatively recent period, and the same may be true of the Nearctic *Prumnacris, Buckellacris* and *Nisquallia,* while *Bohemanella*, the single component of which was long considered a *Melanoplus*, may have similarly crossed the Bering land-bridge but in the reverse direction (i.e., from the Nearctic). On the other hand *Zubovskya* was clearly in North America before the Pleistocene, as its present discontinuous distribution on that continent unquestionably points to glacial ice-sheets as the agency separating the eastern and western sections of its North American distribution.[10] It is also within the realms of possibility that the eastern Asiatic forms of *Zubovskya* (all known from the Palearctic) are not the parent stock, but instead are intrusives from the New World, where the genus is present over a far greater area. Clearly *Bohemanella* has been derived from one of the montane lines of the genus *Melanoplus*, to which it is exceedingly close if actually distinct generically. None of the other very considerable representation of melanoploid genera in the New World shows any very close resemblance to Old World ones, and we are forced to the conclusion that their evolution has taken place in the New World, and that while migration and countermigration may have taken, and probably did take, place the limited Old World representation certainly cannot be considered the parent stock, or that area the evolutionary center of the whole, in view of the disparity in the development of the tribe in these two great areas.

It is hardly conceivable that evolutionary centers such as that in the southern half of South America have developed in a relatively short period of time from a parent one as distant as east-central Asia (i.e., Angara), particularly where we consider the degree and extent in time of the isolation which tropical America

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[10] See REHN and REHN, Trans. Amer. Entom. Soc., LXII, p. 8 (1936).

(i.e., south of Tehuantepec) is known to have had.[11] Instead it seems much more logical and warranted to regard the Melanoplini as a basic New World entity, probably developing rather early in North America, where by far its greatest complexity is found today, the South American centers being established subsequently during certain of the periods of connection with North America.[12] The isolation of the two South American centers from one another is understandable from the viewpoint of Andean orogeny and the development of the great Amazon basin as a barrier to certain forms of life. The presence in North America of genera not widely removed from some of those of the Palearctic Region can as well be interpreted through a westward movement of their progenitors as the usual assumption that the reverse was true. This we know from fossil evidence has taken place in a number of the higher forms of animal life.

To summarize, in the New World we have 59 genera and, conservatively evaluated, 471 species and subspecies of the Melanoplini, these found over a great range of latitude and including almost all possible conditions, or from above the Arctic Circle to about 41° south latitude, and from below sea-level (in parts of California) to arctic alpine summits sometimes bordering perpetual snow (in Washington and Oregon), and from the Atlantic to the Pacific coasts. Three major centers of New World radiative evolution are evident, the separation of which is due to their geological backgrounds. The absence of members of the Melanoplini from areas of the Palearctic, such as North Africa, Iran and much of Anatolia, would indicate that the tribe was not present when these areas received most of their other orthopteran elements of undoubted Palearctic origin. The fact that many, in fact most, of the Palearctic Melanoplini are montane does not militate against this argument, as montane areas are, and long have been, definite features of the apparent regional centers of the Old World, and in the Palearctic regions mentioned where the Melanoplini are absent purely montane species represent other groups of insects. On the other hand in the Nearctic they apparently occupied, and still occupy, almost every type of environment, persisted through the sweeping Pleistocene glaciations, and there developed into one of the most highly diversified existing tribes of the Acridoidea. To disregard the evidence of an existing fauna of remarkable complexity—clearly not a development of a short period of time—is hardly justifiable today. Much of the manner of thought which failed to grasp the obvious conclusion here reached, has been due to an absence of first-hand acquaintance with the elements of some of the faunas involved, and a lack of knowledge of the very broad adaptability to almost all types of environments found in many of the Nearctic Melanoplini. A personal comprehension of the field conditions under which all but two of the Nearctic genera live has enabled me to approach this problem with an open mind. It has been my privilege to study either in the field or in the laboratory, or in both, all the genera and all but a very limited number of the species or subspecies of Nearctic and Neotropical Melanoplini, and as laboratory material all but a few of the genera and the majority of the species of the same known from Eurasia.

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[11] Except for Lower Oligocene times this isolation is regarded by Schuchert as having been continuous from the Upper Eocene to at least the Lower Pliocene. See SCHUCHERT, "Historical Geology of the Antillean-Caribbean Region," maps 10 to 16.

[12] For a careful and critical analysis of this latter question in its Caenozoic aspect the reader is referred to SIMPSON, G. G., 1950, "History of the Fauna of Latin America," American Scientist, XXXVIII, pp. 361–389, 10 figs.

A New Milliped of the Genus Cylindrodesmus from Palmyra Island

By RALPH V. CHAMBERLIN, University of Utah

In a small but interesting collection of chilopods and diplopods collected in Hawaiian and other Pacific islands were specimens of a new species of the genus *Cylindrodesmus* taken on Palmyra Id. in 1948. These and the other specimens of the collection were made by N. L. H. Krauss, through whose courtesy I have been privileged to study the material. The species here described makes the third to become known in *Cylindrodesmus*, the others being *C. hirsutus* Poc., the genero-

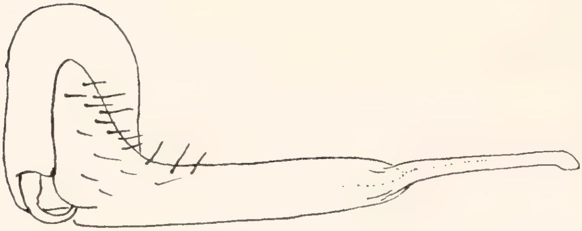

FIG. 1. *Cylindrodesmus palmyrae* n. sp. Right gonopod of male, ventral aspect.

type which is native to Java and other East Indian islands, and *C. villosus* Poc. of Rotuma. In addition Dr. Schubart records what he regards as a distinct variety of *C. hirsutus* from Brazil.

Cylindrodesmus palmyrae new species

Body moniliform, the prozonites being conspicuously less in diameter than the metazonites. The metazonites convex both antero-posteriorly and transversely. Head above and in front with the typical clothing of dense, short hairs, laterally with some longer ones. Metazonites clothed with the usual very short hairs as well as more sparsely with the typical longer setae. Cauda in dorsal view subtriangular, with the caudal end bluntly rounded.

The general color of the body dull, or slightly brownish yellow, the color uniform, the head and caudal segments not abruptly darker, chestnut, as these parts are in *hirsutus;* legs a brighter yellow.

In contrast with the gonopods of the male in *hirsutus,* in which the blade of the telopodite is evenly curved and gradually narrowed to the distal end, the telopodite in the present species presents a long, thicker proximal division, which in ventral view is straight, and an abruptly narrower distal portion which curves ventrad and then cephalad. For details see the accompanying figure.

Segments of the male, 19, of the female, 20.

Length 5 mm., being thus smaller than the usual specimens of *hirsutus.*

Locality. PALMYRA ISLAND. 27 specimens taken by N. L. H. Krauss in February, 1948. The types are in the author's collection.

Some Notes on Preparing Whole Insects for Sectioning [1]

By LAWRENCE S. DILLON,[2] A. and M. College,
College Station, Texas

The ordinary run of insects have always presented many difficulties in the preparation of whole specimens for sectioning. While standard procedures have yielded quite satisfactory results with such soft-bodied forms as grubs, caterpillars, plant lice, and the like, they do not do so with even those relatively pliable types, such as flies and bees, let alone bugs and beetles. Consequently, when it became imperative that serial sections of whole bees be prepared, special techniques had to be sought out. The author was fortunate in developing a procedure whereby bees, softer beetles like Melyrids, and even the large black horse-fly (*Tabanus atratus*) could be sectioned. Nothing he could find enabled him to section the adult weevils, dung-beetles, or the like.

FIXATION

Of the several fixatives tried, Gilson's fluid proved the most satisfactory. When it was employed on such insects as bees, flies, and melyrid beetles, the specimens remained pliable during the entire procedure, whereas in Bouin's, Zenker's, Hardy's, formalin, and Flemming's W.A. + 0.9% sodium chloride, the exoskeleton tended to become quite hard or brittle. With larger specimens, fixing was quite frequently carried out *in vacuo* with good results. However, the longitudinal dorsal muscles of the thorax often showed a tendency to contract and break free of their anterior attachment; whether this was a result of the vacuum treatment, improper fixation, or of subsequent treatment has not been ascertained.

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[1] This study was in part supported by a grant-in-aid from the National Science Foundation for research on honeybee nutrition under the general direction of Mr. Nevin Weaver.

[2] The writer is indebted in many and various ways to the following persons: Dr. V. A. Little, Mr. M. Price, and Mr. N. Weaver, of the Department of Entomology, and to Dr. Sidney Brown, of the Biology Department, who made his vacuum oven and other equipment available.

Although Gilson's has proven most advantageous for use on adult forms, grubs, caterpillars, maggots, and similar soft-bodied creatures are best fixed in Bouin's, where the slight hardening effect aids in maintaining the exoskeleton in more nearly its original shape. Fairly high vacuum (28 inches) applied during the process aids penetration, but caution must be exercised in reducing the pressure, otherwise the specimens may explode.

DEHYDRATION

The attempt was made to avoid as far as possible all reagents known to have a hardening affect on chitin, such as higher concentrations of ethanol, xylene, and the like. Consequently, Stiles' procedure, utilizing n-butanol in place of higher concentrations of ethanol, was followed, with good results. This subsequently was found to be improved considerably by the addition of phenol, to the extent of 4%, to each step in the dehydration process, except the second, with which it was poorly miscible. With some considerable latitude, the following schedule was followed: 35% ethanol, 30 minutes; 9 parts of 45% ethanol + 1 part of n-butanol, 2 hours; 8 parts of 60% ethanol + 2 parts of n-butanol, 2 hours; 6 parts of 80% ethanol + 4 parts of n-butanol, 4 hours; 4 parts of 95% ethanol + 6 parts n-butanol, 6 to 24 hours; 2 parts of 95% ethanol + 8 parts n-butanol, 6 to 24 hours.

On several occasions the procedure recommended by Murray (1937) was tried, where phenol and chloral hydrate warmed together in equal parts are used for dehydration (12–24 hours), following fixation first in 10% formalin solution + 0.8% sodium chloride and secondly in Gilson-Carnoy. However, results were disappointing as the specimens displayed considerable shrinkage and hardening; vacuum treatment gave no improvement in these regards.

CLEARING, EMBEDDING, AND SECTIONING

For clearing, a-terpineol was by far the most satisfactory, showing no apparent hardening effects on the exoskeleton. Following butyl alcohol dehydration, it was employed in three mixtures with n-butanol: 1 part of n-butanol + 1 part terpineol; 1 part butanol + 2 parts terpineol; 1 part butanol + 3 parts terpineol; and terpineol, three changes. About 1 hour was given in each step. This reagent was found, however, to possess one distinct flaw; it was difficult to remove from the body cavity. Even after embedding in melted paraffin in a vacuum oven held at 28 inches and 65° for 72 or more hours, it was found in objectionable amounts within the wax and body spaces. Consequently, toluol and toluol-wax was tried following clearing and, proving satisfactory, was incorporated into the procedure.

During the warm months in the environs of the laboratory where this study was carried out, it proved highly advantageous to employ high-melting paraffin or similar waxes; lower melting-point waxes have shown neither advantages nor disadvantages during the cooler periods. After placement of the specimens in pure wax, however, it was found highly beneficial to maintain them at sufficiently high temperatures under vacuum, a vacuum oven being employed for the purpose. A temperature of 65° and a vacuum of 28 inches were usually maintained for at least 24 hours and sometimes somewhat longer, depending upon the size and hardness of the insect.

Before embedding could be considered complete, after the wax had thoroughly hardened, it was essential that all bubbles that were present be removed by means of hot needles. Especially was it requisite to remove the film of vapor that frequently continued to adhere to the exoskeleton despite the vacuum treatment. This was usually performed under a dissecting microscope so that the tiniest bubble could be detected. Likewise, when the ribbons were being prepared, if any bubbles became apparent within the insect, sectioning was discontinued until the space had been filled and the fresh paraffin had become quite hard. For it was found that a film of vapor on the body surface would prevent the wax from gripping it tightly so that the tissue would tear out or drop out during or following sectioning. Cavities within the body encourage tearing in addition.

When due caution had been exercised, it was possible to section down to 7 μ in thickness without undue compression. Sections of greater thinness were not at all satisfactory; however, for general histological purposes, 7 to 10 μ seemed to serve quite well.*

HYDRATION, STAINING, ETC.

Following sectioning, any standard procedure served well. As the specimens cannot be freed of contamination from the fixative in the whole state, it is necessary that they be treated with iodine or lithium carbonate in appropriate solutions before staining. As Gilson's was most commonly employed, iodine was added to the 70% alcohol and sometimes also to the 50% when large numbers of slides were being handled.

For staining, Mallory's gave excellent results with good contrast between tissues. In using this stain, sections were left in solutions 1 and 2 for periods of two and four minutes respectively. Destaining proceeded very rapidly and had to be watched closely, for the sections became totally bleached in short order.

REFERENCES

LARBAUD, MLLE. 1921. Nouvelle technique pour les inclusions et les préparations microscopiques des tissus végétaux et animaux. C. R. Acad. Sci. Paris 172: 1317–1318.

MARGOLENA, L. 1932. Concerning dehydrating agents for paraffin embedding. Stain Tech. 7: 25.

MURRAY, J. A. 1937. Technique for paraffins sections of formol-fixed insect material. Journ. Roy. Micro. Soc. (3), 57: 15.

STILES, K. A. 1934. Normal butyl alcohol technic for animal tissues with special reference to insects. Stain Tech. 9: 95–100.

* ED. NOTE: Dr. A. G. Richards tells me that a static eliminator is most useful in facilitating thin sectioning of insects. Such eliminators remove static by bombarding the knife and specimen block with alpha particles (and are harmless to the operator). The ribbons of any usual thickness (1 to 10 μ) just float down across the knife instead of crumpling at the edge or buckling. Convenient forms of alpha emitters are currently available from most of the large supply houses.—R. G. S.

Herbert Osborn: A Brief History of Entomology.* A Warning

It is often regretted that the U.S.A. and Europe know too little of each other. The above-mentioned book is a piece of evidence as to one side of this saying. The author shall not be blamed because to him "the origin of entomological societies is still a mystery" or for not knowing "when the teaching of Entomology began," but he certainly should have known more about his own period. I shall confine myself to a small selection of statements relating to the Scandinavian countries.

p. 24–28: The Danish, the Norwegian, and the two Finnish entomological journals are missing.

p. 36: "The Swedish collections . . . include probably what has been preserved of his (Linnaeus') original material, though it is said that his first private collection was sold to the British Museum."

All Linnaeus' collection was sold by his widow not to the British Museum, but to a Mr. Smith from whom it came to the Linnean Society, London. In Sweden only insects determined by him in other collections exist.

p. 36: "There (in Sweden) are type specimens perhaps of Fabricius, but Fabrician types are mainly in Kiel. Some said to be in Copenhagen." By far the greater part of Fabricius' types are in Kiel and Copenhagen, half at each place. None in Sweden.

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* Ed. Note: The full title is: A Brief History of Entomology, including time of Demosthenes and Aristotle to modern times, with over five hundred portraits. Pp. 1–303, pls. 1–58. The Spahr & Glenn Company, Columbus, Ohio, 1952. The first part has chapters on Entomology in Commerce and Industry, Classification, Economic Entomology, and Medical Entomology. Part II, Regional Entomology, takes up 17 different countries or regions. Part III gives life sketches of many entomologists, and portraits of 522 of them. The portraits go back as far as Redi and Malpighi but include also many of the present-day leaders, with Americans the best represented.—R. G. S.

p. 114: J. C. Schiødte is mentioned only as a teacher of forest entomology. Actually, as keeper of the entomological department of the Zoological Museum, Copenhagen, his main work is taxonomic besides his fundamental descriptions of beetle larvae.

p. 116: "Systema Naturae. The edition of 1758 is usually taken as the date for recognition of species he described or the date on which to fix certain genera." This is a curious way of denoting the fixing point of binomial nomenclature.

p. 116: "Among his (Linnaeus') students were . . . possibly Fallen." Fallén was 14 years old when Linnaeus died.

p. 117: Finland. Three lines on Peter Kalm and two on E. E. Bergroth is all that is told about the country of J. R. Sahlberg, John Sahlberg, the two Reuters, Mannerheim, J. A. Palmén, Saalas, Krogerus, Linnaniemi, Frey, and a lot of younger, very fine entomologists.

p. 48: A purely entomological statement: "Protura . . . have antennae, six legs and a pair of terminal appendages." They have no antennae, twelve legs (three pairs of abdominal appendages) and no terminal appendages.

All the "probably" and "presumably" and "I do not know" might have been checked by means of a postcard. Only once this is tried, and this is the reason why the entomology of Brazil is so extensively stated—as extensively as it should have been for all countries.

About 50 per cent of the names of foreign entomologists, localities or titles are misspelled.

Writing history is a science demanding special ability and must not be confused with writing memoirs. It is a pity when this happens. Somebody ought to have helped the author by checking his statements or advising him to confine himself to his personal memoirs. As it is I am most unfortunately forced to warn against the use of statements from this book the heading of which entitles it to so great an interest.

S. L. Tuxen
Zoological Museum, Copenhagen

A new name for Phytomyza subpusilla Frost (Diptera)

By S. W. Frost, State College, Pa.

Phytomyza subpusilla Frost was described in The Journal of the New York Entomological Society, Vol. 41 : 254–266, 1943, as a miner on the leaves of certain Cruciferae and Compositae, nasturtium, plantain and fern. It appears that *subpusilla* Frost is a primary homonym of Mallock's Formosan species published in 1914. The writer therefore proposes a new name **propepusilla,** placing the species in the genus **Liriomyza** according to the classification of European workers.

Dicymolomia julianalis Walker (Lepidoptera: Pyralidae) and its Ichneumonid Parasite, Cremastus gracilipes Cushman, Reared from Typha latifolia at London, Ontario

By W. W. Judd, University of Western Ontario,
London, Ontario

On June 1, 1952, heads of cat-tail, *Typha latifolia,* were examined for the presence of insects, in a swamp adjacent to the north-west corner of Huron and William Streets in London, Ontario. Heads infested with larvae of *Dicymolomia julianalis* Walker were on dead plants of the previous year's growth and were recognizable by their considerably fluffed out appearance caused by the loosening of the flowers from the rachis by the activity of the larvae. Claassen [1] says of these infested heads that "the seeds are kept from scattering by being tied together with silk woven by the larvae. Neither wind nor rain is able to tear apart the heads so protected. Accordingly they form a good shelter for the larvae during the winter." He reports that typically the larvae bore in and pupate in the rachis of the head but that many remain in the fluffy material in the heads to spin their cocoons and pupate. Cole [2] also refers to *D. julianalis* as being an inhabitant of *Typha latifolia.*

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[1] Claassen, P. W. 1921. Cornell Univ. Agric. Exp. Stn. Mem. 47.

One hundred of the infested heads from the swamp at London were snapped from their stalks and were examined for the presence of larvae. The rachis was pulled out of each head and the felty mass of the head could then be unrolled, revealing the insects within. Of the one hundred heads examined 66 contained one larva, 27 contained two larvae, 4 contained three larvae, 1 contained four larvae and 2 contained one pupa each. The presence of two pupae in the large collection of larvae on June 1 is in accord with the statement of Claassen that "pupation begins about the first of June."

Forty-one of the larvae were preserved in fluid and the remaining larvae and the two pupae were placed in glass jars with ravelled heads of the cat-tail, for rearing. The length of each of the preserved larvae was measured, under a binocular microscope, by means of a scale graduated to 0.1 mm. The lengths varied from 6.0 to 13.5 mm. with an average of 9.9 mm., indicating that many of them were considerably longer than those studied by Claassen who records that full-grown larvae are from 7 to 10 mm. long. The coloration of the larvae corresponded with Claassen's description.

The mass of ravelled heads in jars was examined daily for the appearance of the emerging moths. Between June 17 and July 3 fifteen moths emerged. Claassen reports that "adults emerge during the latter part of June and the first part of July." The moths were identified as *Dicymolomia julianalis* Walker by Mr. H. W. Capps of the U. S. National Museum, one of the specimens being deposited in the collections of that institution and the others in the collection of the University of Western Ontario. No further specimens emerged by July 13, when the material was discarded. On June 19 a single ichneumonid wasp emerged and was identified as *Cremastus gracilipes* by Dr. L. M. Walkley of the U. S. National Museum, the specimen being deposited in the collection of that institution. This species was described by

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[2] Cole, A. C. 1931. Ent. News 42: 6, 35.

Cushman,[3] the type-host being *D. julianalis*. Cushman[4] also records later rearings of this wasp from the same host.

Current Entomological Literature

Compiled by **VENIA T. PHILLIPS**, Librarian

Academy of Natural Sciences of Philadelphia

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania pertaining to entomology, including all arthropods except Crustacea. Coverage will be world-wide as regards major contributions to systematics as well as for all papers on morphology, physiology, embryology, etc. In addition, for species from the Americas and the Pacific (Nearctic, Neotropical and Polynesian regions) all minor contributions to taxonomy, distribution, etc., will also be recorded.

This list gives references of the year 1953 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

GENERAL—Birch, L. C.—Experimental background to the study of the distribution and abundance of insects. I. The influence of temperature, moisture and food on the innate capacity for increase of three grain beetles. [50] 34: 698–711. **Bonnet, P.**—Mise au point sur la lettre initiale des noms spécifiques de personnes. [138] 58: 113–24. **Britt, N. W.**—Differences between measurements of living and preserved aquatic nymphs caused by injury and preservation. (Ephemera.) [50] 34: 802–03. **Hayward, K. J.**—An entomologist in Argentina. II. Buenos Aires and La Rioja. [Ent. Record] 65: 310–15. **Hinton, H. E.**—Some adaptations of insects to environments that are alternately dry and flooded, with some notes on the habits of the Stratiomyidae. [143] 11: 209–27, ill. **Kellen, W. R.**—A quantitative sampler for aquatic insects. [76] 46: 913–14. **Kiriakoff, S. G.**—Zoogéographie et phylogénie. [136] 89: 126–34. **Knowlton, G. F.**—Utah insect notes. [36] 48: 125–28. **Kullenberg, B.**—Nouvelles observations sur les rapports entre Ophrys et les insectes. [Bull. Soc. Sci. Nat. Maroc] 32: 175–79. **Lindroth, C. H.**—Some attempts toward experimental zoogeography. (Carabidae.) [50] 34: 657–66, ill. **Medler, J. T. & A. R. Albert.**—The relationship between populations of alfalfa insects and soil treatments with boron. [76] 46: 793–97. **Müller, H. J.**—Der blattlaus-befallsflug im bereich eines ackerbohen- und eines kartoffelbestandes. [28] 3: 229–58, ill. **Murgatroyd, J. H. & G. J. Kerrich.**—Eighth Congress of British entomologists, Leeds, 10th–13th July, 1953. (Including group picture.) [142] 4: 145–58, ill. **Rawson, D. S.**—The bottom fauna of Great Slave Lake. [Jour. Fish. Res. Bd. Canada] 10: 486–520. (Insects, p. 495–97.) **Rendtorff, R. C.**—A method of exposing flies to infectious material. [80] 39: 672–73, ill. **Robinson, H. S.**—Mercury-vapour lamp technicalities. [Ent. Gaz.] 4: 280–81. **Rolston, L. H. & F. D. Miner.**—A new pinning unit. [82] 26: 146–47, ill. **Ullyett, G. C.**—Biomathematics and insect population problems. A critical review. [Memoirs, Ent. Soc. Southern Africa] no. 2, 89 pp., ill.

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[3] CUSHMAN, R. A. 1917. Proc. U. S. Nat. Mus. 53: 503.

[4] CUSHMAN, R. A. 1930. Proc. U. S. Nat. Mus. 76: 1.

BIOGRAPHIES, OBITUARIES—**Barr, Charles M.**, 1919–1952.—Obituary with short biography, by G. B. Vogt. [47] 7: 52–55. **Burgess, Albert Franklin,** 1873–1953.—Obituary, with portrait, by A. I. Bourne. [76] 46: 918–20. **Eldik, Henri Charles Louis van,** 1890–1953.—In memoriam, by M. Hardonk. [57] 14: 389–90. Port. **Hyslop, James Augustus,** 1884–1953.—Obituary, with portrait, by H. Sollers. [76] 46: 920–21. **Jordan, Karl H. C.,** 1888– .—Commemoration of his 65th birthday, by H. Sachtleben. [28] 3: 357–58, port.

ANATOMY, PHYSIOLOGY, MEDICAL—**Acree, F., Jr.**—Studies on the chromatography of gyptyl azoate. (Porthetria dispar.) [76] 46: 900–02. **Bauers, C.**—Ueber die orientierung wirbelloser tiere zum licht. [159] 64: 348–90. **Blanton, F. S.**—Toxicity of several new organic insecticides to body lice (Pediculus humanus corporis DeG.). Pt. 1. [101] 61: 169–80. **Brauns, A.**—Beiträge zur ökologie und wirtschaftlichen bedeutung der aphidivoren syrphidenarten. [28] 3: 278–303, ill. **Buck, J. B. & M. L. Keister.**—Cutaneous and tracheal respiration in the Phormia larva. [30] 105: 402–11. **DeCoursey, J. D., A. P. Webster & others.**—An antibacterial agent from Tribolium castaneum (Herbst). [52] 46: 386–92. **& R. S. Leopold.**—Studies on the effect of insecticides on the oviposition of

Anopheles quadrimaculatus Say. [52] 46: 359–65, ill. **Fraenkel, G. & V. J. Brookes.**—The process by which the puparia of many species of flies become fixed to the substrate. [30] 105: 442–49. **Franklin, W. W.**—The effects of Nosema apis on package and overwintered honeybee colonies used for alfalfa pollination. [76] 46: 780–85. **Gersch, M.**—Ueber die ausscheidung von farbstoffen bei der reblaus (Homop.). [160] 151: 225–36. **Ghelelovitch, S.**—Influence de la température sur le développement d'une tumeur héréditaire chez la drosophile (Drosophila melanogaster Meig.). [2] 237: 1445–47. **Gösswald, K. & K. Bier**—Untersuchungen zur kastendetermination in der gattung Formica. [160] 151: 126–34. **Hafez, M.**—On the behavior and sensory physiology of the house fly larva, Musca domestica L. II. Prepupating stage. [78] 124: 199–225. **Harnisch, O.**—Die rolle der analpapillen beim wasserwechsel der larva von Chironomus plumosus. [100] 40: 537. **Hopp, H.-H.**—Histologische veränderungen in den organen der kleiderlaus (Pediculus vestimenti N.) unter der einwirkung vom insektiziden. [159] 64: 267–72. **Iyengar, R.**—Un nouveau mode d'alimentation chez la larve d'Anopheles turkhudi et les caractères morphologiques particuliers à cette larve. [2] 237: 1449–51, ill. **Jakovlev, V. & F. Krüger.**—Vergleichende untersuchungen zur physiologie der transpiration der orthopteren. [159] 64: 391–428. **Jones, J. C.**—On the heart in relation to circulation of hemocytes in insects. [52] 46: 366–72, ill. **Jordan, K. H. C.**—Wachsdrüsen bei Odontoscelis, sowie ein beitrag zur biologie dieser gattung (Hemip., Pentatom.) [160] 151: 186–92. **Kartman, L.**—Comparative susceptibility of Anopheles quadrimaculatus "strains" to domestic Plasmodium vivax. [80] 39: 668–69. —A correlation of malphigian tubule size with development of Dirofilaria immitis in the mosquito. [80] 39: 671–72. **Keister, M. L.**—Some observations on pupal respiration in Phormia regina. [79] 93: 573–87, ill. **Krishna, D.**—The lipoid contents of the Golgi bodies in the oocytes of the Indian water spider, Lycosa birmanica. [116] 94: 315–18, ill. **Legendre, R.**—Le système sympathique stomacogastrique ("organe de Schneider") des araignées du genre Tegenaria. [2] 237: 1283–85. **Ludwig, D. & A. J. Bartolotta.**—The effect of DDT on the composition of larval blood of the Japanese beetle (Popilla japonica Newman). [101] 61: 119–25. **McElroy, W. D., J. W. Hastings, J. Coulombre & V. Som-**

nenfeld.—The mechanism of action of pyrophosphate in firefly luminescence. [Arch. Biochem. Biophys.] 46: 399-416. **Mistric, W. J. & C. F. Rainwater.**—Further studies of the action of insecticides on cotton insects. [76] 46: 838-44. **Munson, S. C. & M. I. Gottlier.**—The differences between male and female American roaches in total lipid content and in susceptibility to DDT. [76] 46: 798-802. **Nüesch, H.**—The morphology of the thorax of Telea polyphemus. I. Skeleton and muscles. [79] 93: 589-609, ill. **Ostlund, E.**—Adrenaline, noradrenaline and hydroxytyramine in extracts from insects. [98] 172: 1042-43, ill. **Pérez-Reyes, R.**—Anopheles aztecus (Hoffman, 1935) a new definitive host for the cyclical transmission of Plasmodium berghei Vincke and Lips, 1948. [80] 39: 603-04. **Poisson, R. & P. Razet.**—Recherches sur la dégradation de l'acide urique chez les hemiptères aquatiques. [2] 237: 1362-63. **Pratt, J. J. & F. H. Babers.**—The resistance of insects to insecticides. Some differences between strains of house flies. [76] 46: 864-69. **Quentin, R. M.**—L'anophtalmie des scaritides. Note préliminaire (Caraboidea). [138] 58: 107-09, ill. **Reimann, K.**—Untersuchungen an der thoraxdrüse der arbeiterin von Apis mellifica. [100] 40: 538. **Rietschel, P.**—Die balgengelenke der durch blutdruck beweglichen gelenke bei Lamellicorniern. [160] 151: 166-74. **Roan, C. C. & S. Maeda.**—The cholinesterase of the oriental fruit fly and its in vitro reactions with various insecticidal compounds. [76] 46: 775-79. **Shafiq, S. A.**—Cytological studies of the neurones of Locusta migratoria Part I. Cytoplasmic inclusions of the motor neurones of the adult. [116] 94: 319, ill. **Sinha, R. N.**—The spermatheca in the flour beetle (Tribolium castaneum Herbst). [101] 61: 131-34, ill. **Steiner, G.**—Zur duftorientierung fliegender insekten. [100] 40: 514-15. **Sturtevant, A. P. & I. L. Revell.**—Reduction of Bacillus larvae spores in liquid food of honey bees by action of the honey stopper, and its relation to the development of American foulbrood. [76] 46: 855-60. **Tahori, A. S. & W. M. Hoskins.**—The absorption, distribution and metabolism of DDT in DDT-resistant house flies. [76] 46: 829-37. **Vachon, M.**—Commentaires a propos de la distinction des stades et des phases du développement post-embryonnaire chez les araignées. [Bull. Mus. Nat. d'Hist. Nat. Paris] 25: 294-97. **Verron, H.**—Sur la possibilité d'un apprentissage latent chez Blatella germanica. [2] 237: 1442-43. **Voy, A.**—

La production par "régénération directe" des tarses hypotypiques et des tarses pentamères au cours du développement post-embryonnaire chez le phasme femelle (Carausius morosus Br.). [2] 237: 1451–54.

ARACHNIDA AND MYRIOPODA—Baker, E. W. & A. E. Pritchard.—A review of the false spider mite genus Tenuipalpus Donnadieu (Acarina: Phytoptipalpidae). [52] 46: 317–36, ill. (*k). **Feldman-Muhsam, B.**—The identity of Rhipicephalus sanguineus in the U. S. A. (Acarina.) [80] 39: 670. **Goodnight, C. J. & M. L.**—Taxonomic recognition of variation in Opiliones. [146] 2: 173–79, 192, ill. **Hoffman, R. L.**—A new Central American milliped of the genus Platyrhacus (Polydesmida, Platyrhacidae). [56] 55: 251–58 (*). **Jayewickreme, S. H. & P. Antonipulle.**—On the feeding habits of an adult trombidiid mite in nature. [46] 25: 157–60. **Kohls, G. M. & A. J. Rogers.**—Note on the occurrence of the tick Ixodes affinic Neumann in the United States. [80] 39: 669. **Legendre, R.**—(See Anatomy.) **Rasmont, R.**—Myologie abdominale d'une theraphoside et d'une dipluride. (Araignees Mygalomorphes.) [Annales Soc. Roy. Zool. Belg.] 83: 225–42, ill., 1952. **Vachon, M.**—(See Anatomy.)

SMALLER ORDERS—Britt, N. W.—Ephemera. (See General.) **Carriker, M. A., Jr.**—Studies in neotropical Mallophaga. XII. Part I. Lice of the tinamous. [117] 13: 209–24. **Chao, H.-F.**—The external morphology of the dragonfly Onychogomphus ardens Needham. [131] 122: no. 6, 56 pp., ill. **Emerson, K. C.**—New North American Mallophaga. [82] 26: 132–36, ill. —A new species of Carduiceps (Mallophaga, Philopteridae). [56] 55: 209–11, ill. **Gösswald, K.**—Der termitenstaat. [Kosmos, Stuttgart] 50: 59–64, ill. **Jellison, W. L., B. Locker & R. Bacon.**—A synopsis of North American fleas, north of Mexico, and notice of a supplementary index. [80] 39: 610–18. **Moore, N. W.**—Population density in adult dragonflies (Odonata-Anisoptera). [74] 22: 344–59, ill. **Morlan, H. B.**—Meringis rectus (Siphonaptera, Hystrichopsyllidae), a new ectoparasite of Kangaroo rats. [80] 39: 605–09, ill. **Poole, V. V. & R. A. Underhill.**—Biology and life history of Megabothris clantoni clantoni (Siphonaptera: Dolichopsyllidae). [Publ. Walla Walla Coll., Dept. Biol.] no. 9, 19 pp., ill. **Racenis, J.**—Records of Venezuelan Odonata, with a description of a new species. [108] 18: 180–89, ill. **St. Quentin, D.**—Der fangapparat der Odonaten. [104] 4:

375–90, ill. **Smit, F. G. A. M.**—Monstrosities in Siphonaptera IV. More cases of castration. [57] 14: 393–400, ill. **Sturm, R.**—Notes on some Siphonaptera of Fulton County, New York. [101] 61: 139–40. **Tuleshkov, Kr. N.**—Pukhoiadi (Mallophaga) ektoparaziti po domashnite zhivotni v Bulgariia. (French summary.) [Bulgar. Akad. Naukite, Zool. Inst. Izvest] 2: 75–161, ill. **Ward, R. A.**—Additional record of phoresy of Mallophaga on Hippoboscidae. [36] 48: 128.

ORTHOPTERA—Dirsh, V. M. & B. P. Uvarov.—Preliminary diagnoses of new genera and new synonymy in Acrididae. [149] 96: 231–37. **Jakovlev & Krüger.**—(See Anatomy.) **Verron, H.**—(See Anatomy.) **Voy, A.**—(See Anatomy.)

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These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

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Bembicini and Stizini (Hym., Sphec.) of New World wanted for revis. study. Will return upon request or at end of project. James E. Gillaspy, Dept. of Zoology, Univ. Texas, Austin 12, Texas.

Agapema galbina. Will exchange cocoons of this moth for nature books. E. Frizzell, Route 4, Box 96, San Benito, Texas.

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ENTOMOLOGICAL NEWS

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A Remarkable New Genus and Species of Isometopid from Panama (Hemiptera, Isometopidae)

By JOSÉ C. M. CARVALHO, Museu Nacional, Rio de Janeiro,
and REECE I. SAILER,* Entomology Research Branch,
U. S. D. A., Washington, D. C.

The authors have encountered a remarkable bug among samples of insects collected in light traps in Panama by F. S. Blanton. This bug belongs to the family Isometopidae, which can be readily distinguished from the related family Miridae by the presence of at least two ocelli. The specimen which is described here as a new genus and species has four ocelli. Since no Heteroptera are known to have more than two ocelli and no normal insect of any order has more than three,* the unusual character of this specimen is readily apparent. The insect is small, being scarcely more than 1.5 mm. long, and the ocelli are not readily seen. However, when viewed under proper light and magnified at 200 diameters, their external appearance is that of ordinary ocelli. Only with the discovery of additional specimens will it be possible to determine with certainty whether this specimen is a freak or whether it is a representative example of the species. In any event, it can be described as a new genus and new species on the basis of characters other than the ocelli.

The new genus is placed in the tribe Isometopini, which is so far represented in the neotropical region by two genera described by the senior author in 1947 (Rev. Brasil. Biol. 7 (2): 255).

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* Except the males of some Coccidae. In these coccids, however, the four large "ocelli" are not true ocelli in the morphological sense, but correspond to the compound eyes.—ED.

ISOMETOCORIS n. gen.

Isometopidae, Isometopini, division Myommaria. General shape of a very small Phylini (Miridae) with spotted dorsum, large eyes and thickened antennae.

Head. Overlapping the anterior margin of pronotum, very short, about seven times as wide as long on median line; vertex obtusely emarginate posteriorly, frons broadly rounded in front; eyes slightly protuberant, each occupying the whole side of head, each partially encircling the antennal socket when seen from side; ocelli present, apparently in number four (figs. 1 and 2), distance between frontal pair about half that separating posterior pair, the latter near hind margin of vertex and distant from eyes by a space about twice their own diameter. Rostrum very long, almost reaching apex of abdomen, with first segment thickened, attaining base of head, third segment shorter than the others.

Antennae. Inserted in the ventral anterior angle of the eyes when seen from side; first segment surpassing apex of clypeus, very short; second segment about four times as long as first, incrassate, with numerous hairs about half as long as width of segment, these showing a flattened appearance when seen with different proper focus and strong light; third and fourth equal in dimension (fig. 4), pilose.

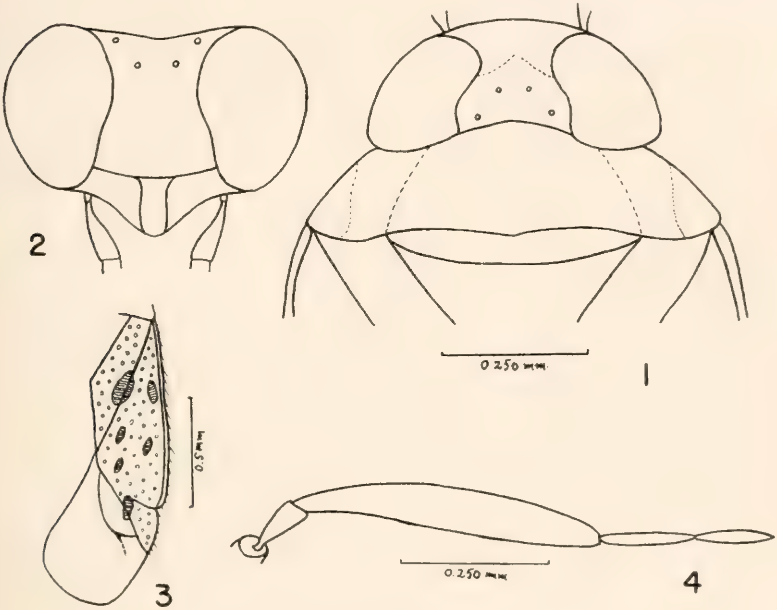
Pronotum. Very short, about three times as wide as long, disc smooth, flat, concave before humeral angles, lateral margins curved towards the head, hind margin slightly bi-concave; collar absent; mesoscutum broadly exposed, setose; scutellum moderately convex, with blunt apex.

Hemelytra. Smooth, erectly pilose, with parallel margins, without apparent veins, embolium linear, somewhat reflexed, cuneus a little longer than wide at base; membrane rugulose, uniareolate, with a spurious vein arising at the posterior angle of areola (fig. 3).

Underside with peritreme raised and circular in shape. Legs saltatorial, almost devoid of pubescence, tibiae with short setae about as long as width of tibiae and shorter pubescence, tarsi very slender with segments of approximately equal length, claws simple.

Type of genus: Isometocoris blantoni n. sp.

This genus differs from all other genera of Isometopini by the absence of lateral carina of pronotum, second antennal segment of male distinctly incrassated, veins of membrane each with a spurious vein, shape of pronotum and presence of four ocelli. In McAtee and Malloch's key (Stylops I (3): 62, 1932) it will run to the couplet which keys out *Lidopus* Gibson, 1917, and *Wetmorea* McAtee and Malloch, 1924, but differs from these genera by the above-mentioned characters.



Isometocoris blantoni n. gen., n. sp.

Fig. 1. Head and pronotum seen from above. Fig. 2. Head seen from front. Fig. 3. Hemelytra with color areas marked. Fig. 4. Antenna showing relative length of segments.

Isometocoris blantoni n. sp. (Figs. 1–4)

Characterized by its color, size, and structure of antennae.

Male: Length 1.57 mm., width 0.71 mm. *Head:* length 0.07 mm., width 0.49 mm., vertex 0.18 mm. *Antennae:* segment I, length 0.10 mm.; II, 0.46 mm.; III, 0.21 mm.; IV, 0.21 mm. *Pronotum:* length 0.21 mm., width at base 0.60 mm. *Rostrum:* length 0.64 mm., segment I, length 0.14 mm.; II, 0.21 mm.; III, 0.10 mm.; IV, 0.17 mm.

Color: General color yellowish with reddish and brown spots; antenna yellowish except for apex of first and apical two-fifths of second segments which are reddish, eyes reddish brown, head with lower portion suffused with red, with a yellow area dorsally; pronotum brown, mottled with yellow; hemelytra yellow with numerous fuscous spots each of which bears a seta, a large yellowish red spot on middle of clavus joining suture, corium with three smaller yellowish red spots on apical portion and one deep red to dark spot on basal third touching embolium, apex of the latter deep red, each of the angles of cuneus bearing a red spot, that of the internal angle largest, surface with setigerous dark red spots, membrane infumate; apex of clavus red; underside of body yellow with thoracic tergites and genital segment suffused with red; femora infumate with apices yellow, hind tibiae generally pale but with some reddish spots on basal half of each.

Morphological characters as given for genus.

Female unknown.

Holotype: Male, Pedregoso, REPUBLIC OF PANAMA, October 28, 1953, F. S. Blanton (in light trap), in the Collection of the United States National Museum, No. 61950.

This species is named in honor of Lt. Col. F. S. Blanton, whose work as entomologist for the U. S. Army's Caribbean Command has resulted in important additions to the insect collections of the U. S. National Museum.

Larva and Pupa of Thrypticus fraterculus (Wheeler) with New Original notes on the Habits of the Family Dolichopodidae. (Diptera)

By Charles T. Greene, College Park, Maryland

The Dolichopodidae is a large and interesting family of beautiful flies. The males have rather distinctive characters but the females are quite difficult to identify unless you have the males associated with them.

Their known life histories are few and quite different in the different genera.

The larvae of *Thrypticus* are miners in plant tissue which is very unusual for this genus and family. (Johannsen and Crosby 1913.)

The larva of *Medetera aldrichii* Wheeler is a predator and sometimes a scavenger on the larvae of *Scolytidae* in the west.

Larvae of *Hydrophorus agalmae* Wheeler are aquatic in fresh water. (Greene 1923.)

Hypocharassus pruinosus (Wheeler): a pupa of this species was found in seaweed on the beach in Florida.

Larvae of *Dolichopus* spp. have been found in damp vegetable mould. (Brauer 1883.)

Larvae of *Aphrosylus* sp. in tufts of algae on rocks along seashore. (Wheeler 1897.)

In checking all the descriptions of the species in the genus *Thrypticus* there was only one case where the female genitalia were mentioned. It said they were "small and yellow."

The females of two other species were dissected; they are equipped to puncture leaf tissue. Their larvae are unknown. See Figs. 4 and 5.

Some time after receiving the specimens of *T. fraterculus* I received two lots of larvae which were similar to *fraterculus* but both were different species. These were miners in aquatic grass causing a small blotch or blister mine.

One lot was collected in Louisiana and the other from California.

Thrypticus fraterculus (Wheeler)

Larva. White, long, slender and cylindrical. 11 segments in addition to the head. Segments 1–4 and the last one shorter than the others. Head rather small, broad and partly retractile. The front of the head with a robust, conical, black, horn-like projection above. Anterior spiracle small; with a circular base, height one half the basal diameter; in the centre is a small, chitinous, pale amber colored tubercle. Last segment tapering toward its apex. Near the apex, on the upper surface is a series of small, black spines. On the dorso-central surface of this segment are located the posterior spiracles. Each spiracle has 3 small, elliptical areas, in a triangular style with a small round button; these are all the same color as the segment.

Larva—10 mm. long and .6 mm. in diameter.

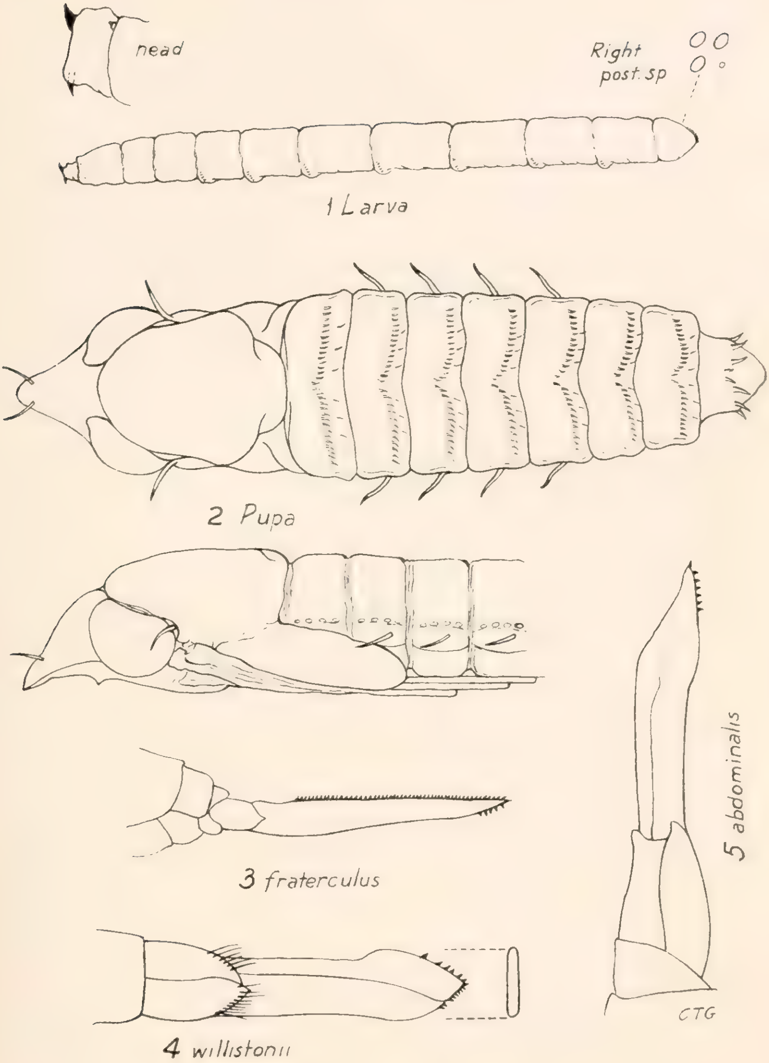
The larva makes small blotch or blister-like mines in the blades of *Scirpus acutus.*

Pupa. Pale cream colored with 8 abdominal segments of about equal length. Head capsule pointed, directed downward; on its dorsum, near its apex are 2 large, pale bristle--like projections; eyes large. Thorax slightly longer than wide with a large, spine-like projection on each side located near the posterior edge of the eye capsule. Abdomen with 8 segments; first 7 segments each with a row of spines, arched forward at the center, located near the posterior edge of each segment; posterior to these spines are 6 dark bristles, 3 each side of the dorso-central line. These 7 segments each have 4 small, elliptical areas on each side (spiracles); segments 2 to 5 have a large spine-like projection on each side, slightly posterior to the middle; last segment about as broad as long, tapering slightly at its apex; 2 small, pointed spines located dorso-centrally and on each side, slightly posterior to this pair are 3 larger spines, all pointing backward.

Pupa—7 mm. long and 1.5 mm. in diameter.

Two adults labeled IX. 2. 1943.

Reared from *Scirpus acutus* collected at Experimental Pond No. 2, Patuxent Research Wildlife Refuge, Prince George's County, Maryland, U. S. Dept. of the Interior.



1. Larva of *Thrypticus fraterculus* (Wheeler). 2. Pupa of *Thrypticus fraterculus* (Wheeler). 3. Ovipositor of *Thrypticus fraterculus* (Wheeler). 4. Ovipositor of *Thrypticus willistonii* (Wheeler). 5. Ovipositor of *Thrypticus abdominalis* (Say).

Collected and reared by Mr. Francis Uhler of this laboratory. Adults, larvae and pupae were submitted by Mr. Robert T. Mitchell, of this laboratory, to Charles T. Greene, for identification.

COMPARISON OF OVIPOSITORS

All of the ovipositors shown are pale yellow, with a narrow tinge of black, here and there, along their edges; they are all sclerotized, thin and blade-like, for piercing and are retractile.

T. fraterculus (Wheeler) Fig. 3

Ovipositor very narrow, tapering to a point at its apex; numerous short, pointed, black, spine-like teeth along the upper edge and 5 teeth on the lower apical edge.

Length: about 2 mm., width very narrow.

T. willistonii (Wheeler) Fig. 4

Ovipositor higher with the apical end broader and tapering to the apex where there are several black, sharp tooth-like spines above and below.

Length: about 1.75 mm.

T. abdominalis (Say) Fig. 5

Ovipositor nearly as high as the previous species with the apical end directed slightly obliquely downward to a point; 6 sharp tooth-like, black spines on the lower edge near the apical end.

Length: about 2.25 mm.

REFERENCES

BRAUER, F. 1883. Die Zweiflügler des Kaiserl. Museums. XIVII, Pt. III, p. 44, pl. IV, figs. 72–75.

WHEELER, W. M. 1897. Proc. Calif. Acad. Sci. 1, p. 145, Pl. IV, fig. 14.

JOHANNSEN, O. A., and C. R. CROSBY. 1913. Psyche 20, pp. 164–166, figs. 1–4.

GREENE, C. T. 1923. Proc. Ent. Soc. Wash. 25, pp. 166–69, Pl. 5, figs. 1–3, a-b.

Distributional Notes on Eutricharea, a Palearctic Subgenus of Megachile, Which Has Become Established in the United States (Hymenoptera: Megachilidae)

By P. D. HURD, JR., University of California, Berkeley

In problems of biogeography it is particularly instructive to have on record distributional information relating to the establishment and dispersal of Palearctic species in the New World. The suspected occurrence in the Nearctic region of *Eutricharea,* a subgenus of the leaf cutting bee genus *Megachile,* was first mentioned by Mitchell[1] (1934: 304). At that time, he believed the subgenus had not become established in the Nearctic area, though he had seen several specimens which were apparently collected in the United States. Since this material was without sufficiently conclusive data, he regarded the specimens as representatives of introduced species which had failed to become established. In this connection, Professor Mitchell remarked that the nesting habits of the group (in hollow stems and twigs) apparently made possible their wide dissemination over the earth through the channels of commerce.

In 1937, Professor Mitchell[2] identified a specimen collected by P. H. Timberlake at Rosemont, Virginia, as *Megachile (Eutricharea) apicalis* (Spinola) and stated (p. 416) that the subgenus was present on the continent "by an introduced and apparently not overly successful species." Five additional records (2 ♂♂, 3 ♀♀) of *M. apicalis* (including the synonym, *M. virginiana*) are cited by him. These specimens are without specific locality data, but show that the species had been taken under natural conditions in Virginia, New Jersey (?), and Canada. Professor Mitchell further states (p. 417) that the two males recorded as *M. apicalis* may be *M. rotundata* (Fabricius), since the males of *Eutricharea* are more difficult to identify than the females.

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[1] MITCHELL, T. B. 1934. Trans. Amer. Ent. Soc. 59: 295–361.

[2] MITCHELL, T. B. 1937. Trans. Amer. Ent. Soc. 63: 381–426.

Krombein[3] (1948: 14) has reported the capture of two female specimens of *M. rotundata* in the Washington metropolitan area. One specimen was taken in an office of the U. S. National Museum. The other was found in a garden at Arlington, Virginia, apparently causing damage.

In a recent paper, Daly[4] (1952) has enumerated the distributional and floral records for specimens of *M. rotundata* which were collected in Kansas, Missouri and Texas. Of particular significance are the dates of capture which cover the years 1948–1951 and the numbers of individuals (25) reported upon. These data provide quite conclusive evidence that the species has become established in the Great Plains region of the United States. Floral visitations by this species are recorded for representatives of four plant families (Labiatae, Lythraceae, Plumbagenaceae and Scrophulariaceae), and of the seven plant species visited four, according to Daly, are cultivated plants of European origin.

With this information in mind, it is interesting to speculate on the recent captures of two species belonging to the subgenus *Eutricharea* in California. As will be noted in the accompanying list of records, all of the California specimens have been taken during the last four or five years, and from a number of well separated localities within the State. The floral records include representatives of four plant families (Compositae, 3; Euphorbiaceae, 1; Leguminosae, 1; Polygonaceae, 1). Of the six plant species visited by the bees, three (*Cosmos* sp., *Medicago sativa, Polygonum aubertii*) are introduced into this country.

Megachile (Eutricharea) argentata (Fabricius)

FRESNO CO.: Raisin City, ♂, X–15–51, on *Centromadia pungens* (P. D. Hurd, Jr.). RIVERSIDE CO.: Riverside, ♀, IX–30–49, on *Heliotropium occulatum* (P. H. Timberlake). SAN JOAQUIN CO.: Tracy, ♂, VI–21–49, on *Medicago sativa* (R. F. Smith).

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[3] KROMBEIN, K. V. 1948. Proc. Ent. Soc. Wash. 50: 14.

[4] DALY, H. V. 1952. Ent. News 63: 210–211.

Megachile (Eutricharea) rotundata (Fabricius)

FRESNO CO.: Raisin City, ♀, X–15–51, on *Centromadia pungens* (P. D. Hurd, Jr.), 6 ♀♀, same data (R. F. Smith). SACRAMENTO CO.: Sacramento, ♂♀, V–13–51 (H. F. Robinson). SOLANO CO.: Vallejo, ♀, X–1–49, on *Cosmos* (J. N. Simons). TEHAMA CO.: Vina, ♂, IX–22–51, on *Solidago* (E. I. Schlinger). TULARE CO.: Visalia, ♀, VI–21–51, on *Euphorbia* (E. I. Schlinger). YOLO CO.: Davis, ♀, V–2–51 (R. C. Bechtel); ♀, VII–28–51, on *Euphorbia* (E. I. Schlinger); ♂, VIII–11–51, on *Euphorbia* (E. I. Schlinger); ♂, VIII–15–51, on *Euphorbia* (E. I. Schlinger); ♂, IX–13–51, on *Polygonum aubertii* (A. T. McClay); ♂, X–2–51, on *Polygonum aubertii* (A. T. McClay); ♂, V–30–52 (A. T. McClay); ♂, VII–2–52 (E. I. Schlinger); 2 ♂, VII–25–52 (A. T. McClay and E. I. Schlinger); ♂, VIII–6–52 (A. T. McClay); 4 ♂, VIII–23–52 (E. I. Schlinger); ♀, VIII–26–52 (A. T. McClay); ♀, VIII–30–52 (A. T. McClay).

It seems reasonable to assume that the subgenus *Eutricharea* has become successfully established in California. The introductions of the two species, *Megachile argentata* and *M. rotundata,* probably occurred as a consequence of increased commercial activities growing out of World War II.

It is unfortunate that we do not possess a sufficient knowledge concerning the habits of our native bees for without such information it is virtually impossible to evaluate properly the interspecific influences arising as a consequence of the establishment of the subgenus *Eutricharea* in California.

In the collection of P. H. Timberlake is a female of *M. rotundata* which was collected at Menges Mills, Pennsylvania, on June 23, 1948, at flowers of *Cichorium intybus.* This record suggests that *rotundata* is apparently widely distributed over the Atlantic seaboard.

At the present writing, three Old World species of *Eutricharea,* a subgenus of the leaf-cutting bee genus *Megachile,* appear to be established within the United States, being found on the Atlantic seaboard, the Great Plain States, and in California. Their introduction must certainly have occurred as a direct consequence of world commerce.

I am indebted to Professor T. B. Mitchell of the University of North Carolina for confirming the identifications of the California specimens.

Culiseta inornata Attacking Man (Diptera)

By William F. Rapp, Jr.[1]

Many students of mosquitoes state that *Culiseta inornata* (Williston) never or seldom bites man and that the species is principally an animal feeder. Dyar[2] (1922: 29) stated: "The adult (*C. inornata*) is not troublesome, probably attacking by preference the larger mammals." Matheson[3] (1944: 226) stated: "They (*C. inornata*) are said seldom to attack man though the writer was frequently bitten by them while collecting in northern Michigan." More recently Ross[4] (1947: 39) stated that in Illinois: "In the early spring the overwintered females bite ferociously, but during the summer this species does not seem to constitute much of a pest even in those regions where it is abundant." Thus, it can readily be seen that the statement that *C. inornata* never bites man has already been disputed. To further substantiate the claim that it does bite man, the author herein reports some specific instances from Nebraska.

Tate and Gates[5] (1944: 7) as a result of their work during the mosquito seasons in 1942 and 1943 found *C. inornata* to be the third most abundant species in Nebraska and to represent 7% of their light trap catch for two years. However, the author in conducting a mosquito survey of the Missouri River Valley of Nebraska during 1952 found *C. inornata* to be of minor importance. Furthermore, it was found only in the spring and fall; no specimens were taken during July and August.

From June 1 to 3, 1953, Leslie B. Beadle and the author conducted a survey along the Missouri River and on three nights made human biting collections. As a result of these collections they were able to take specimens of *C. inornata* biting man.

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[1] Entomologist, Nebraska State Department of Health, Division of Sanitation, Lincoln, Nebraska.

[2] Dyar, H. G. 1922. U. S. Nat. Mus. Proc. 62: 1.

[3] Matheson, R. 1944. Handbook of the Mosquitoes of North America. Ithaca, N. Y.

[4] Ross, H. H. 1947. Bull., Nat. Hist. Surv. 24.

[5] Tate, H. D. and D. B. Gates. 1944. Univ. Nebraska College of Agric. Res. Bull. 133.

At Ponca State Park, a deciduous wooded area three miles north of Ponca, Dixon County, Nebraska, on June 1, 1953 between 7:19 and 7:34 P.M. one female specimen of *C. inornata* was taken. On June 2, 1953, at Fontenelle Forest (Child's Point), Sarpy County, Nebraska between 8 and 9 P.M. three female *C. inornata* were taken while biting man.

From information gained by larval surveys and light trap collections it is evident that this species is abundant in Nebraska during the months of May and June. However, biting collections indicate that while *C. inornata* does bite man, it seems to prefer some other host.

Recovery of Japanese Beetle Parasites Introduced in May 1940

Nematode parasites introduced into a locality in May, 1940, for control of the Japanese beetle were recovered in the vicinity on June 11, 1953.

The nematode *Neoaplectana glaseri* was distributed by the New Jersey Department of Agriculture during the period 1939–1942, with the establishment of surface treated plots at three and one-half mile intervals throughout the sections of the state then infested by the Japanese beetle. Experimental work proved that the parasite spreads through migration of the nematodes through the soil and by the flight of infected adult beetles.

On June 11, during the collection of 200 Japanese beetle larvae for experimental work, dead larvae were found having the appearance typical of nematode-infected larvae. Laboratory examination revealed *Neoaplectana glaseri* larvae in twelve of nineteen larvae submitted.

The plot of turf to which the parasites had been applied on this property was approximately one-quarter mile from the location where the parasitized grubs were found.

This parasite has maintained itself under field conditions for thirteen years and is still exerting an influence on the host population.—HAROLD B. GIRTH, N. J. Department of Agriculture, Trenton, New Jersey.

New Southeastern Records for Zorotypus Hubbardi Zoraptera [1]

By T. P. Copeland, The University of Tennessee, Knoxville

New state and county records for the small, relatively unknown order Zoraptera were obtained during summer collecting trips in Tennessee, Arkansas, Louisiana, Mississippi, and Kentucky.

Zorotypus hubbardi Caudell was taken in Pearl River and Lamar Counties, Mississippi, on Sept. 1, 1953. The collection consisted of 15 apeterous females, 20 apterous males, and 6 nymphs with wing pads. Inasmuch as Zoraptera are found in the adjacent states of Alabama, Tennessee, Arkansas, and Louisiana, it is probable that the order has a wide distribution within the state. No previous records are known from Mississippi, however.

Collections were made on Sept. 17, 1953, in three southeastern Kentucky counties: Leslie, Bell, and Harlan. Three deälate females, 35 apterous males, 31 apterous females, and 8 nymphs with wing pads were obtained. This is also a new state record for the order.

New county or parish records for Arkansas, Tennessee, and Louisiana are as follows: for Arkansas—Drew, Jefferson, Chicot, and Hot Springs Counties, 32 apterous males, 21 apterous females, and 4 nymphs with wing pads, Sept. 7–10, 1953; for Tennessee—Knox, Sullivan, Carter, Chester, Perry, Putnam, and Hardman Counties, 51 apterous females, 68 apterous males, and 10 nymphs with wing pads, Sept. 13–16, 1953; for Louisiana—Rapides and Caldwell Parishes, 18 apterous females and 15 apterous males, Sept. 5, 1953.

All collections were made by means of an aspirator. In Knox County, Tennessee, Zoraptera were taken just beneath the bark of a decaying log. All other collections were taken beneath slabs of wood or bark partially buried in old sawdust piles. The single collection from beneath bark was the author's first attempt to collect from this habitat, and should not indicate an unusual environment. Gurney,[2] Valentine and Wilson,[3] and Deboutteville [4] report collections from within decaying logs and stumps, beneath bark on logs, and from sphagnum moss. Of 43 sawdust heaps examined, seventy-four percent contained Zoraptera.

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[1] Contribution No. 83 from the Department of Zoology and Entomology, University of Tennessee.

A Preoccupied Name in the Miridae (Hemiptera)

For the past quarter-century the name *Eustictus filicornis* (Walker, 1872) has been used for the species that was formerly known as *E. grossus* (Uhler, 1887). The synonymy of these two names was first indicated in 1926 by Blatchley in a footnote, inserted under *E. grossus*, at page 884 of his "Heteroptera of Eastern North America."

Walker described the species under the genus *Capsus*, and his original combination is thus a primary homonym of *Capsus filicornis* Fabricius, 1803. The name *Eustictus grossus* (Uhler) must therefore be restored as the proper one for this species.—R. F. Hussey, Univ. of Florida, Gainesville.

New Appointment

Mr. Harold J. Grant, Jr., has been appointed Assistant Curator of the Department of Insects of the Academy of Natural Sciences of Philadelphia as of February 1, 1954. Mr. Grant is a graduate of the University of Colorado, from which he has also received his degree of Master of Science. In addition he has had valuable field experience in our Western States. He will be associated with the Curator of the Department, Mr. James A. G. Rehn, in the preparation of the monograph of the Orthoptera of North America, which has been inagurated through the support of the National Science Foundation. In this specific project, work on which is now actively progressing, Mr. Grant will be known as the Junior Investigator, assisting and collaborating with Mr. Rehn, the Principal Investigator.

[2] Gurney, A. B. 1938. Proc. Ent. Soc. Wash. 40: 57–87.

[3] Valentine, B. D., and O. E. Wilson. 1949. Ent. News 60: 180–181.

[4] Deboutteville, C. D. 1948. Rev. Ent. (Rio de Janeiro) 19: 347–352.

Current Entomological Literature

Compiled by **VENIA T. PHILLIPS**, Librarian
Academy of Natural Sciences of Philadelphia

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania pertaining to entomology, including all arthropods except Crustacea. Coverage will be world-wide as regards major contributions to systematics as well as for all papers on morphology, physiology, embryology, etc. In addition, for species from the Americas and the Pacific (Nearctic, Neotropical and Polynesian regions) all minor contributions to taxonomy, distribution, etc., will also be recorded.

This list gives references of the year 1953 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

Alfred, D. M. & D. E. Beck.—Mite fauna of woodrat nests in Utah. [Proc. Utah Acad. Sci.] 30: 53–6. **Augustson, G. F. & S. F. Wood.**—Notes on California mammal ectoparasites from the Sierra Nevada foothills of Madera County. [145] 52: 48–56. **Beck, D. E.**—Arthropod consortes found in the nests of Neotoma cinerea acraia (Ord) and Neotoma lepida lepida Thomas. [Utah Acad. Sci., Proc.] 30: 43–52. —A study of some consortes found at a nesting site of the northern cliff swallow, Petrochelidon albifrons albifrons (Raf.) (Fleas, mites & bugs.) [Utah Acad. Sci., Proc.] 30: 39–42. **Beckel, W. E.**—Preparing mosquito eggs for embryological study. [92] 13: 235–37. **Burnett, T.**—Effects of temperature and parasite density on the rate of increase of an insect parasite. [50] 34: 322–28. **Burton, G. J.**—Photomicrography of mosquitoes with the single-lens reflex camera. [92] 13: 248–52, ill. **Cloudsley-Thompson, J. L.**—The ecological significance of diurnal rhythms in terrestrial arthropods. [Science Progress] 42: 46–52, 1954. **Crane, J. & H. Fleming.**—Construction and operation of butterfly insectaries in the tropics. [154] 38: 161–72, ill. **Mayr, E., E. G. Linsley & R. L. Usinger.**—Methods and principles of systematic zoology. McGraw-Hill, N. Y., Toronton & Lond., 328 pp. (Review by C. D. Michener [111] 29: 228.) **Moore, B. P.**—Dilute acetic acid as a relaxing fluid. [60] ser. 4, v. 89: 277. **Pennak, R. W.**—Fresh-water invertebrates of the United States. Ronald Press, N. Y., 769 pp., 470 figs. $14.00. (Review by R. L.

Usinger [111] 29: 221–22.) **Ross, E. S.**—Insects close up. Univ. Calif. press, Berkeley & Los Angeles. $1.50 (Cloth $2.25). 81 pp., 125 figs. (part col.). (Review by J. D. Lattin [111] 29: 222.) **Schwenke, W.**—Biozönotische betrachtungen zur biologischen bekämpfung von schadinsekten. [28] 3: 529–36. **Thevenard, P.**—Emploi de la radio-cinématographie pour la recherche biologique, et application de cette méthode à l'étude de la métamorphose chez la mouche. [2] 237: 1791–93. **Veiga Ferreira, G. da.**—Entomological exhibition, its influence on research. [South Afr. J. Sci.] 50: 140–42. **Woodroffe, G. E.**—An ecological study of the insects and mites in the nests of certain birds in Britain. [40] 44: 739–72, ill.

BIOGRAPHIES, OBITUARIES—Bishopp, Fred Corry, 1884– .—Portrait. [92] 13: 260, 262. **Börner, Carl,** 1880–1953. Obituary by J. P. Doncaster. [60] 4th ser. v. 89: 287. **Comstock, Anna Botsford,** 1854–1930.—Autobiography with port. (See Comstock, John Henry.) **Comstock, John Henry,** 1849–1931.—The Comstocks of Cornell: John Henry Comstock and Anna Botsford Comstock, an autobiography by Anna Botsford Comstock. Ed. by G. W. Herrick & R. G. Smith. Ithaca, N. Y., Comstock Publ. Co., 1953, 286 pp., ill. incl. portraits. $4.50. **Eager, George,** 1885–1953.—Obituary by George Powers. [92] 13: 261–62. **Gutierrez, Ramon,** 1917–1953. Obituary. [Agr. Tec. Chile] 13: 86. **Marchand, M. S.**—Nécrologie, by M. Cl. Herbulot. [138] 58: 137. **Prell, Heinrich,** 1888– . Commemorating his 65th birthday. [28] 3: 435–36, port. **Tooke, Frank G. C.**—Obituary, with portrait, by B. S. [J. Ent. Soc. So. Afr.] 16: 232–33.

ANATOMY, PHYSIOLOGY, MEDICAL—Becker, G.—Beobachtungen über eier und eiablage einiger holzfressender cerambyciden. [28] 3: 504–18, ill. **Burchfield, H. P. & others.**—Improved methods for rearing larvae of Aedes aegypti (L.) for use in insecticide bioassay. [Contr. Boyce Thompson Inst.] 17: 317–31. **Burchfield, H. P., J. D. Hilchey & E. E. Storrs.**—An objective method for insecticide bioassay based on photomigration of mosquito larvae. [Contr. Boyce Thompson Inst.] 17: 57–86, 1952. **Chovnick, A.**—The effect of the lozenge pseudoalleles on the development of tarsal claws in Drosophila melanogaster. [Genetics] 38: 659. (Abstract.) **Epling, C., D. F. Mitchell & R. H. T. Mattoni.**—On the role of inversions in wild populations of Drosophila pseudoobscura. [62] 7: 342–65, ill.

Fung, S.-T. C. & J. W. Gowen.—Sex development in Drosophila melanogaster as influenced by a gene in the third chromosome. [Genetics] 38: 662–3. (Abstract.) **Ghelelovitch, S.**—Au sujet de l'action de la temperature sur le développement d'une tumeur héréditaire chez la drosophile (Drosophila melanogaster Meig.). [2] 237: 1574–76. **Goetsch, W.**—Beschleunigung der entwicklungsgeschwindigkeit von Drosophila um 20 bis 30 prozent. [100] 40: 584–85. **Harnisch, O.**—Die gasaufnahme der larve von Sialis lutaria L. [159] 64: 496–514. **Heidenthal, G.**—A comparison of X-ray induced dominant and recessive lethals in first meiotic metaphase eggs and in sperm of Habrobracon. [Genetics] 38: 668. (Abstract.) **Herskowitz, I. H. & H. J. Muller.**—Evidence against the healing of X-ray breakages in chromosomes of female Drosophila melanogaster. [Genetics] 38: 669. (Abstract.) **Hilchey, J. D.**—Studies on the qualitative requirements of Blatella germanica (L.) for amino acids under aseptic conditions. [Contr. Boyce Thompson Inst.] 17: 203–19. **& R. L. Patton.**—Effects of irregular sex ratios on growth response data from nutritional assays upon Blatella germanica (L.). [Contrib. Boyce Thompson Inst.] 16: 455–59, 1952. **Hurpin, B.**—Relation entre la diapause et l'ovogenèse chez Melolontha melolontha L. (Scarabeidae). [2] 237: 1789–91. **Kaplan, W. D.**—The influence of minutes upon somatic crossing over in Drosophila melanogaster. [Genetics] 38: 630–51. **Koenig, M.**—Ueber den stickstoff und den aminosäuregehalt des bienenblutes. [100] 40: 583. **Lewis, C. T.**—Contact chemoreceptors of blowfly tarsi. [98] 173: 130–31, ill., 1954. **Long, D. B.**—Effects of population density on larvae of Lepidoptera. [126] 104: 543–84, ill. **Manning, F. J.**—The sex chromosome of the honey bee. [62] 7: 388–90, ill. **Matthée, J. J.**—The production of diapause eggs by incipient swarms of Locustana pardalina (Walk.). [J. Ent. Soc. Co. Afr.] 16: 132–38. **Merrell, D. J.**—Selective mating as a cause of gene frequency changes in laboratory populations of Drosophila melanogaster. [62] 7: 287–96. **Mittelstaedt, H. & E. von Holst.**—Reafferenzprinzip und optomotorik. [160] 151: 237–52. **Ohnesorge, B.**—Der einfluss von geruchs- und geschmacksstoffen auf die wahl der frasspflanzen beim braunen rüsselkäfer Hylobius abietis L. [28] 3: 437–68. **Richards, A. G., M. B. Clausen & M. N. Smith.**—Studies on arthropod cuticle. X. The asymmetrical penetration of water. [75] 42: 395–413. **Rizki, M. T. M. & C. G. Davis, Jr.**—Light as an ecological determinant of interspecific competition between Drosophila willistoni and Drosophila melanogaster. [15] 87: 389–92. **Ruppel, H.**—Physiologische untersuchungen über die bedeutung des ventraltubus und die atmung der Collembola. [159] 64: 429–69. **St. Amand, G. S. & S. R. Tipton.**—The separation of neuroblasts and other cells from grasshopper embryos. [Science] 119: 93–4, 1954. **St. Amand, W.**—Differential frequency of acentric fragments induced in grasshopper neuroblasts by X-irradiation at known mitotic stages. [Genetics] 38: 688. (Abstract.) **Schenk, G. O. & R. Wirtz.**—Eine weitere synthese des cantharidins. [100] 40: 581. **Stallworthy, W. B. & R. H. Buker.**—Respiration of Habrobracon juglandis (Ashmead) for various sex types. [Genetics] 38: 694–95. (Abstract.) **Takami, T.**—Movement of yolk cells in the silkworm (Bombyx mori L.). [Science] 119: 161–62, ill., 1954. **Tinbergen, N.**—The evolution of mating behavior patterns. (Drosophila.) [62] 7: 391. **Wallace, B.**—On coadaptation in Drosophila. [15] 87: 343–58. **Whiting, A. R.**—Frequencies of dominant and recessive lethals induced in Habrobracon eggs by X-rays in air and in nitrogen. [Genetics] 38: 701. (Abstract.) **Wilbert, H.**—Normales und experimentell beeinflusstes auftreten von männchen und gynandromorphen der stabheuschrecke. [159] 64: 470–95.

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ORTHOPTERA—Chapman, John A.—Ecological notes on Grylloblatta in Montana. [Proc. Montana Acad. Sci.] 13: 39–41. **Günther, K.**—Über die taxonomische gliederung und die geographische verbreitung der insektenordnung der Phasmatodea. [28] 3: 541–63, ill. **Hayward, K. J.**—An entomologist in Argentina III. Exploring for locusts. [Ent. Record] 65: 350–55. **Kamp, J. W.**—New locality and habitat record for Grylloblatta. [145] 52: 61–3. **Katiyar, K. N.**—Variation and post-embryonic growth in the number of antennal segments in three species of Indian short-horned grasshoppers (Acridoidea), together with observations on the number of segments in adult Acrididae based on the collections at the Forest Research Institute, Dehra Dun. [Agra. Univ. Jour. Res., Sci.] 2: 331–42, ill. **Mishchenko, L. L.**—Nasekomye priamokrylye. Saranchevye (Cantantopinae). [Fauna SSSR, novaia seriia] 54, 610 pp., ill., 1952. **Nutting, W. L.**—First records of the European Mantis religiosa (L.) from Maine. [115] 60: 89. —A gregarine, Diplocystis, in the haemocoele of the roach, Blaberus craniifer Burm. [115] 60: 126–28, ill. **Pope, P.**—Studies on the life histories of some Queensland Blattidae. Part I. Domestic species. [Roy. Soc. Queensland, Proc.] 63: 23–46, ill. —Part II. Native species. *Ibid.*, p. 47–59, ill. **Rees, H. & A. Jamieson.**—A supernumerary chromosome in Locusta. [98] 173: 43–4, ill., 1954. **Wilbert, H.**—(See Anatomy.)

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Reviews

THE ODONATA OF CANADA AND ALASKA. By Edmund M. Walker, Professor Emeritus of Zoology, University of Toronto, Honorary Curator of Zoology, Royal Ontario Museum of Zoology and Paleontology. Vol. One, Part I: General, Part II: The Zygoptera—Damselflies. University of Toronto Press: 1953. 8 vo. Pp. xii, 292, 44 plates of many line engravings numbered separately for each plate, the plates printed throughout the text. Price, $13.00.

Part I deals with A, The external structure of the order Odonata, pp. 3–5, The external features of the adult dragonfly, pp. 5–23, pls. 1–4, The external features of the full-grown nymph, pp. 23–31, pls. 5 & 6, and B, Life history and habits of adults, pp. 32–45, pl. 7, Developmental stages, pp. 45–52, Enemies of dragonflies, pp. 52–55, Parasites, pp. 55–57.

Part II is on the Zygoptera of Canada and Alaska, beginning with a key to the suborders of Odonata and a key to the families of Zygoptera, pp. 61–62, followed by a statement of the distribution of the Zygoptera of Canada and Alaska, which are provisionally grouped as A, Austral or southern species (6), B, restricted eastern species (2), C, U. S. and Canadian provinces east of the Great Plains (18 spp.), D, Atlantic to Saskatchewan or foothills of the Rocky Mountains (5 spp.), E, Transcontinental species (10), F, British Columbia and western States, eastward to Saskatchewan and Manitoba (2 spp.), G, Species restricted in Canada to the interior, particularly the Great Plains (3), H, Southern British Columbia (5 spp.), pp. 62–65. The total is recognized as 51 species, "a number that is somewhat less than half the total number known from North America north of Mexico."

The systematic account of these Zygoptera occupies pp. 65–278, including keys to genera and species. Under each species are given descriptions of adult male and female and nymph, the habitat, range, distribution in Canada, and field notes. A selected bibliography, pp. 279–286, and an index, pp. 287–292, complete the volume.

The excellent account of the external structure of the Odonata is based on both the Zygoptera and the Anisoptera, as it is evidently designed to serve as an introduction both to this volume and to a later one on the Anisoptera.

Structural details and color patterns of both adult sexes and of nymphs are given for many species; thus the figures of the mesostigmal laminae of the females of *Argia, Enallagma, Coenagrion, Nehalennia, Ischnura, Chromagrion* and *Amphiagrion* are novelties for most of our North American species. The author tells us (preface, p. vii) that he has "collected and studied Odonata for more than fifty years in every province of Canada." As one result his field notes, mentioned above, are highly interesting to the students of these insects, describing the habitats, pairing and flight periods, with lists of numerous geographical localities in which each species has been observed. Nor are the data of other investigators neglected. Even though realizing that the bibliography "is in no sense a complete" one, we wish that Tillyard and Fraser's "Reclassification of the Order Odonata," in the Australian Zoologist, 1938–1940, had been included.

As the paper is not calendered, except for plate 8, the book is delightful reading. Our copy is bound in an attractive dark green buckram and weighs one pound, 6½ ounces. This book will be of great use to entomologists working on the fauna of the United States, in spite of the limitations suggested by its title. It is a pleasure to recommend it highly to entomologists and zoologists generally, wherever they are located.

PHILIP P. CALVERT.

THE COMSTOCKS OF CORNELL: John Henry Comstock and Anna Botsford Comstock, 1953. Comstock Publishing Associates, Ithaca, N. Y. Pp. xi, 286, 7 halftones. Price, $4.50.

This volume is more than the story of the lives of two people; in the telling it becomes an exposition of an admirable philosophy of living, and an account of a newly developing science in America. While it is called an autobiography, it is perhaps more about her husband than about Mrs. Comstock, though the lives of the two had a unity of aim and achievement seldom encountered.

John Henry Comstock taught the first entomology course given in an American university. He continued this teaching for 40 years, and among his students were most of the men who became early and important figures in the field. Another distinguished scientist said of him: "He has been probably the greatest teacher of natural history that America has known." These facts, coupled with the use of his books for many years as standard texts in the field, make it evident that his influence was greater than that of any other man in the development of American entomology.

From this account of the events of his life there gradually emerges the picture of a young man of great determination, integrity, and ability, and of much self-reliance. One wonders, had there been a G-I bill-of-rights, whether he would have taken advantage of it, and it seems quite certain that he would not have thumbed a ride. He said: "I have known lots of fellows who left college because of lack of money; but once when I tried to leave college, I did not have enough money to get out of town; so I stayed. . . ."

It is unusual that a man of Mr. Comstock's eventual accomplishments should have married a woman who was to make so large a place for herself in the world of science, art, and writing. Though never active in politics, she was named in 1923 by the League of Women Voters as one of the 12 greatest women of America.

This book, I feel sure, must be considered the final and definitive Comstock biography. It is a warm personal account of two good scientists who were also very fine people.

M. E. PHILLIPS.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

American Sarcophagidae—wanted for identification. H. R. Dodge, P.O. Box 185, Chamblee, Georgia.

German lepidopterist wishes to correspond and receive live material (eggs and pupae) in exchange for dried imagoes. Johannes Reichel, Koenigsberg, Krs. Wetzlar 16, Germany.

For exchange—The periodic Cicada, T. septendecim. Desire Lepid., espec. Papil., Sphing. & Speyeria. Also Col., espec. Ceramb. & Lucan. John W. Morris, 2704 Genesee St., Syracuse 9, N. Y.

Cynipid and Itonidid galls—American species wanted; purchase or exchange for British species. Fresh or dried. D. Leatherdale, F.R.E.S., Old Woodstock, Oxford, England.

Wanted—Reprints or papers concerning insects taken in Alaska for inclusion in list of Alaskan insects. R. H. Washburn, Alaska Experiment Station, Palmer, Alaska.

Conopidae of the World wanted. Will pay 10¢ to $1.00 for pinned and labelled specimens. S. Camras, 4407 N. Milwaukee Ave., Chicago 30, Illinois.

Anisoptera—Nearctic sp. wanted for exchange, espec. Ophiog., Arigom., Aeschna, Neurocor., Somatoc., Cordulia, Dorocor., Leucor. R. D. Cuyler, Dept. of Entomology, N. C. State College, Raleigh, N. C.

Bembicini and Stizini (Hym., Sphec.) of New World wanted for revis. study. Will return upon request or at end of project. James E. Gillaspy, Dept. of Zoology, Univ. Texas, Austin 12, Texas.

Agapema galbina. Will exchange cocoons of this moth for nature books. E. Frizzell, Route 4, Box 96, San Benito, Texas.

Wanted—Data on exact location of colonies of *Epibembex* (olim *Bembix*) (Hymenoptera), any species, any part of country, for biological studies. Howard E. Evans, Dept. Entomology, Cornell Univ., Ithaca, N. Y.

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ENTOMOLOGICAL NEWS

VOL. LXV MAY, 1954 No. 5

A New Species of Water Beetle from Michigan (Coleoptera, Haliplidae) [*]

By PAUL J. SPANGLER, Columbia, Missouri

Among various aquatic beetles taken by the author in Emmet County, Michigan, in 1952, was a series of an unfamiliar haliplid beetle. These were determined as a new species of *Brychius*, a small genus of rare haliplids previously reported only from British Columbia, Alberta, California, Oregon, and Utah. In addition, specimens from Montana and Colorado have been examined by the author. Specimens of the new species were sent to Mr. Hugh B. Leech of the California Academy of Sciences, who concurred with the author's determination.

Formerly four species of *Brychius* had been described from North America: *B. parvulus* Robts., *B. hornii* Cr., *B. albertanus* Carr, and *B. pacificus* Carr. However, *B. parvulus* Robts. has since been removed from the genus and a new genus, *Apteraliplus* Chandler (1943), has been erected for it. A key to the North American species of *Brychius* was constructed by Carr (1928) and another to the two California species by Chandler (1948). Unfortunately, examination of a series of the various species shows that the characters used for determination are variable and difficult to evaluate. A revision of the genus is greatly needed, but this must wait until sufficient material is available.

The species from Michigan runs to *pacificus* in Carr's key since the sides of the prosternum anterior to the coxae are coarsely punctate. It may be distinguished from *pacificus* and all the other species by the much denser punctation on the head,

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[*] Contribution No. 1378 from the Department of Entomology, University of Missouri and the Michigan Biological Station.

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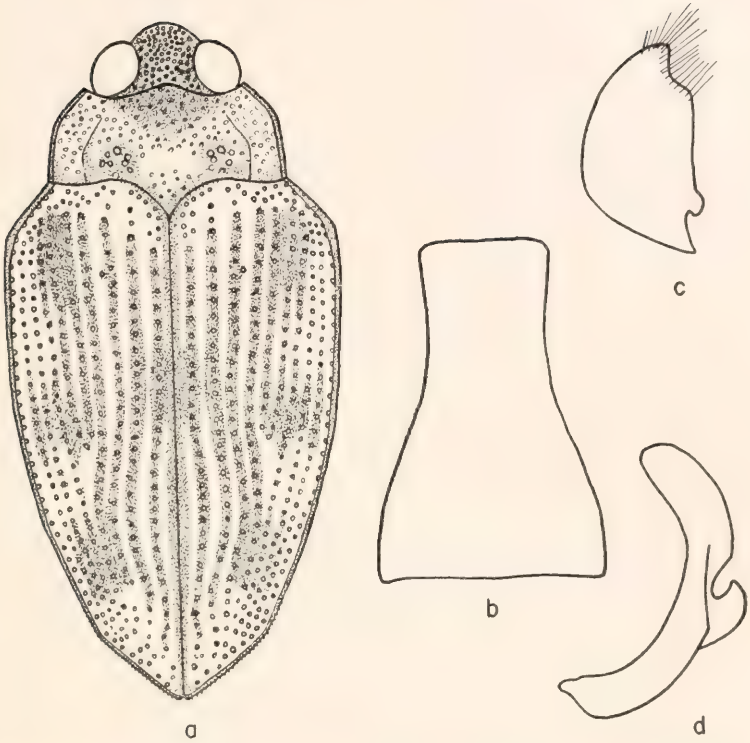
infuscation on the base of head between eyes, coarser punctation on pronotum, and larger average size. In the western species the punctures on the head are separated by at least their width; those on the Michigan species are separated by about one-half their width. The maculation of the latter species is also more pronounced and more confluent.

Brychius hungerfordi n. sp.

Holotype male: Length 4.20 mm.; width 2.15 mm.

Head testaceous apically, infuscate around margin of eyes, these margins connected with transverse basal infuscation; punctures coarse, separated by one-half their width, smaller than those of pronotum; clypeus fuscous, closely punctured; appendages testaceous, penultimate segment of labial palpi strongly dilated. *Pronotum* testaceous except a piceous apical spot, lateral margins, two basal spots and an impressed fold on each side extending from base two-thirds the length of the pronotum; punctures larger and less dense than those of head, interspaces micropunctate; disc less densely punctate and considerably depressed; basal half of pronotum converging but little, becoming abruptly incurved in apical half; anterior and posterior margins bisinuate. *Elytra* testaceous with ten rows of setigerous punctures not extending completely to apex, intervals micropunctate; elytral margins, sutural stripe and rows of punctures piceous; apices denticulate. *Prosternum* margined from base, converging strongly to region of fore coxae then becoming nearly parallel converging very slightly to apex; margins and base infuscate, medial portion testaceous; finely and sparsely punctured basally with micropunctures in the interspaces, more coarsely punctate on apical third. *Mid-metasternum* strongly margined, margins continued in line with those of prosternum, sinuate and divergent apically; more finely punctate than prosternum, with micropunctures; margins and base infuscate, depressed behind the middle coxae. *Metasternum* coarsely and sparsely punctate laterally, with deep foveae laterad of the middle coxae. *Antecoxal piece* coarsely punctate laterally, finely and sparsely punctate medially; apex emarginate. *Metacoxal plates* coarsely punctate laterally, becoming less punctate towards coxal



Brychius hungerfordi n. sp.: a. holotype male; b. prosternum; c. left paramere; d. aedeagus.

suture. *Ventral segments:* first visible sternum piceous, coarsely and densely punctured; next two infuscate medially, the last abdominal sternum testaceous, finely and more densely punctate, noticeably channeled medially from the apex nearly seven-tenths the length of the segment. *Legs* testaceous except for a poorly defined fuscous ring at bases of femora; fore tarsal segments thickened, first three segments provided with small tufts of hair.

Allotype: Length 4.20 mm., width 2.20 mm. Similar in all respects to holotype except fore tarsi not modified.

Holotype male and *allotype*, Maple River, McKinley Township, Emmet County, Michigan, July 8, 1952 (P. J. Spangler).

These will be deposited in the U. S. National Museum under type number 62208.

Paratypes: 25 females, 21 males same data as types; 8 females, 5 males, July 7, 1952; 1 female, 3 males, June 24, 1952; 4 females, 13 males, July 20, 1952; 1 female, July 23, 1952, same locality and collector; 1 male, July 23, 1952, same locality (H. B. Hungerford); 5 females, 2 males, August 13, 1952, same locality (Irwin Slesnick).

Paratypes will be distributed to the following institutions and persons: U. S. National Museum, California Academy of Sciences, British Museum, Canadian National Museum, Snow Entomological Museum, University of Michigan, American Museum of Natural History, University of Missouri, Museum of Comparative Zoology, and Messrs. F. N. Young, J. B. Wallis, H. F. Howden, I. L. Slesnick and the author's collection.

Variations: Although the holotype and allotype are about the same size, the females average larger than the males. The size varies considerably within each sex. The smallest specimen in the series is a male, 3.70 mm. in length and 1.90 mm. in width, while the largest is a female, 4.35 mm. in length and 2.25 mm. in width.

Although the great majority of specimens are marked as described for the holotype, three were observed to have the third and fourth elytral series of punctures interrupted briefly in the middle of the elytra, and then terminating normally in the apical third as indicated in figure a.

Habitat: This species was collected among plant roots under approximately two feet of water. The roots were exposed, through a gravel bottom, to a considerable current of cold water. A few exploratory collections in the west branch of Maple River and various other streams in the same general vicinity were unfruitful. Other aquatic beetles collected in the area but from beneath the overhanging bank were *Sperchopsis tesselatus* (Zieg.), *Hydroporus stagnalis* G. & H., *Deronectes depressus* Fab., and *Colymbetes sculptilis* Harr.

Acknowledgments: The author wishes to express his gratitude to Mr. Hugh B. Leech of the California Academy of Sci-

ences for his loan of the western species of *Brychius*, for suggestions, and verification of the determination.

REFERENCES

MATHESON, R. 1912. Journ. N. Y. Ent. Soc. 20: 161–162.
ROBERTS, C. H. 1913. Journ. N. Y. Ent. Soc. 21: 94–95.
CARR, F. S. 1928. Canad. Ent. 60: 23–26.
CHANDLER, H. P. 1943. Pan-Pacific Ent. 19: 154–158.

Notes on the Chilopod Genera Linotaenia and Tomotaenia with Description of a New Korynia

BY RALPH V. CHAMBERLIN

In reviewing the representatives of the chilopod family Linotaeniidae from the western states, it has seemed desirable to clarify and justify the nomenclature that I believe must be applied to them and to list the synonymies that seem clear together with notes on those that seem probable.

The type of the new *Korynia* described is retained for the present in the author's collection.

Genus **LINOTAENIA** C. L. Koch

Linotaenia C. L. Koch, 1847, Rev. d. Myr., pp. 86, 188.
Strigamia Sager, 1856, Proc. Acad. Nat. Sci. Philadelphia, vol. 8, p. 109; Wood, 1865, Tr. Amer. Phil. Soc., ser. 2, vol. 13, p. 181 (Non Gray, 18424) ; Crabill, 1953, Ent. News, vol. 64, p. 169.
Scolioplanes Bergsöe and Meinert, 1866, Naturh. Tidsskr., ser. 3, vol. 7, p. 48.
Linotaenia Pocock, 1890, Ann. Mus. Civ. Genoa, ser. 2, vol. 9, p. 8; Bollman, 1893, Bull. U. S. Nat. Mus., no. 46, p. 142; Cook, 1895, Amer. Nat., vol. 29, p. 866.

A genus *Strigamia* was proposed by Gray in 1842 (Cycl. Anat. and Physiol, vol. 3, p. 547) with no more than the following characterization: "Eyes none. Antennae 14 jointed, moniliform, rather elongate. Feet very numerous, 50 or more." This description is so general as to cover the entire order of Geophilida, providing neither generic nor family characters that might serve to place the genus. Since Gray neither named nor indicated any species for it, *Strigamia* has been quite generally ignored by European workers. However, in 1856, as indicated above, Sager in America used the name in connection with his new species *fulva,* thus for the first time validating *Strigamia* as a genus. *Strigamia* must date from 1856, with Sager as its author, and not from 1842 with Gray as author.

However, before Sager's paper of 1856, C. L. Koch had already, in 1847, erected the genus *Linotaenia* for a group of species to which Sager's *fulva* belongs. *Strigamia* thus becomes a synonym of *Linotaenia.** In 1866, Bergsöe and Meinert set up a new name *Scolioplanes,* including under it among other forms the species *acuminata* and *crassipes* which Koch had previously placed in *Linotaenia.* It seems puzzling that European workers have continued to use *Scolioplanes* in spite of the fact that it is thus plainly a synonym of *Linotaenia.*

Genus **TOMOTAENIA** Cook

Tomotaenia Cook, 1895, Amer. Nat., vol. 29, p. 866.
Paraplanes Verhoeff, 1933, Ark. Zool. (Stockholm), vol. 26, no. 10, p. 22.
Generotype.—*T. parviceps* (Wood).

In 1895, Cook sought to restrict *Linotaenia,* not to replace it, by proposing a genus *Tomotaenia* to include the American species, which he suggested differed from the European forms "in details of the mouthparts" without, however, giving any hint as to what he supposed these differences to be. However, he named as type of his genus a Pacific coast species, *Strigamia parviceps* Wood, which does typify well a group of species adequately distinct from *Linotaenia,* a group, so far as known, not represented in the eastern state, but occurring also in Asia.

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* If typical *fulva* Sager proves to have the last pretergite separated from the corresponding pleurites and this character is accepted as of subgeneric significance, *Strigamia* would be available for the subgeneric name and *Protoplanes* Verhoeff would fall as a synonym to it.

For an Asiatic representative of this group, Verhoeff in 1913 proposed a genus *Paraplanes,* naming as its type, a new species, *P. svenhedini.* In 1938 he attributed to this genus a California species to which he gave the name *P. californicus* but which, as indicated above, is obviously a synonym of Wood's *parviceps,* the type of *Tomotaenia.*

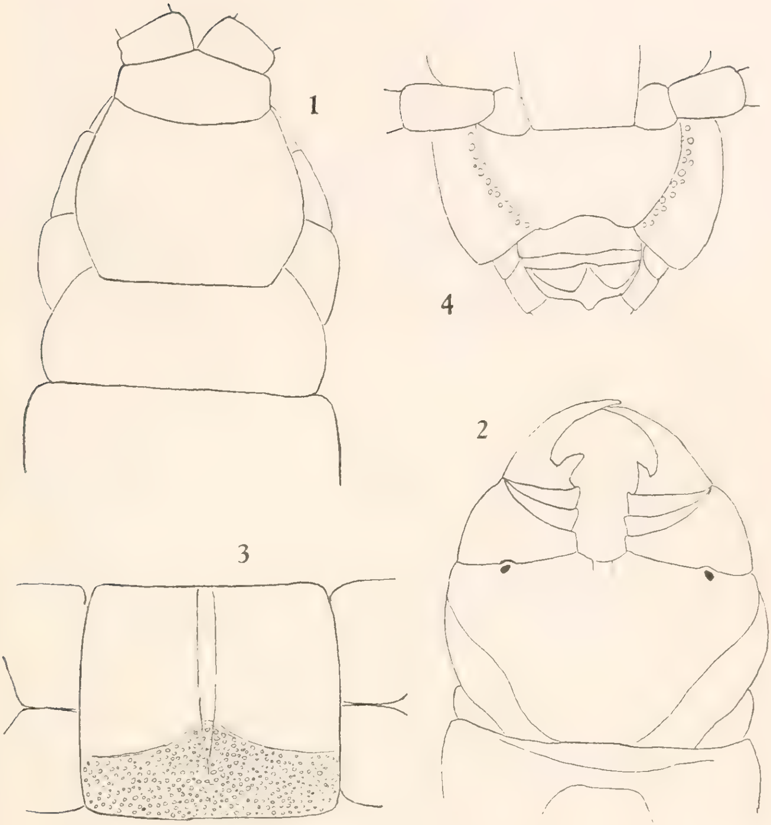
Tomotaenia parviceps (Wood)

Strigamia parviceps Wood, 1863, Jour. Acad. Nat. Sci. Philadelphia, n. s., vol. 5, p. 49; 1865, Trans. Amer. Phil. Soc., vol. 13, p. 187.
Strigamia epileptica Wood, 1863, Jour. Acad. Nat. Sci. Philadelphia, n. s., vol. 5, p. 49; 1865, Trans. Amer. Phil. Soc., vol. 13, p. 188, figs. 21, 22.
Non *Scolioplanes parviceps* Meinert, 1886, Trans. Amer. Phil. Soc., vol. 23, p. 25.
Scolioplanes imperialis Brolemann, 1896, Ann. Soc. Ent. France, vol. 65, p. 60, pl. 1, figs. 14–16.
Linotaenia rubelliana Chamberlin, 1904, Proc. Acad. Nat. Sci. Philadelphia, vol. 56, p. 656.
Linotaenia laevipes Chamberlin (non Wood), 1912, Pomona Jour. Zool. and Ent., vol. 4, p. 659.
Paraplanes californicus Verhoeff, 1938, Zool. Anz., vol. 122, p. 282.

Meinert (op. cit.) described as questionably Wood's *parviceps* "a specimen which was said to be a type of Dr. Wood" and which "was labeled '*Strigamia bidens* Wood' for which no more definite locality was given than" N. A.?). It seems inexplicable that Dr. Meinert should choose to ignore the original label and describe the specimen under another name without any explanation for doing so. His description was accepted by Attems (1929) as applicable to *parviceps* but not on the basis of any personal study. This identification was undoubtedly erroneous.

This large form, usually of a brilliant red color in life, a color that fades in preservatives, as here conceived occurs over much of California and north as far as British Columbia. Over this range it is subject to much variation in size of the mature individuals and in number of pairs of legs without, however, showing any correlation between the variations and distribution or habitat, so far as studies so far made show. The variation in number of legs is from a minimum of 61 pairs (cotype of *rubelliana* from Palo Alto) to 91 pairs. A high number of legs seems to be especially common in Oregon and Washington. The maximum length so far recorded is that for the type of Wood's *epileptica,* 5½ in. or 140 mm. Other specimens measured by the author run up to 11–110 mm. Having made notes on the type of *epileptica* several years ago, it seems desirable to publish a redescription with some figures of this remarkably large specimen.

Tomotaenia epileptica (Wood) (*-parviceps*). A very large form, strongly attenuated cephalad, more moderately caudad. (The original description gave the color as orange throughout.) The head and dorsal plates, together with the prosternum, still exhibit the minute white punctation noted by Wood, with the general color now faded to brownish. The cephalic plate with median length nearly equal to the greatest width (cf. Fig. 1). Frontal suture present. Antennae filiform, contiguous at base. Basal plate of form shown in the figure, somewhat overlapped by the head. Claws of prehensors when closed not attaining front margin of head; tooth at base of claw large, obliquely subtruncate at tip (cf. Fig. 2). Dorsal plates smooth and shining, not sulcate. Spiracles all circular, the anterior ones large, gradually decreasing toward posterior segments. Ventral plates with a median longitudinal sulcus sharply impressed, with a transverse sulcus more or less evident behind middle and in front of proliferous area. Last tergite broad, caudally strongly convex. Last intertergite fused with pleurites. Last ventral plate very broad, its sides convex and strongly converging caudad, its caudal margin incurved. Coxal pores concentrated along and beneath border of sternite, opening into a broad longitudinal channel or furrow. Anal legs slender, the last joints broken off in type. Pairs of legs, 81. Length about 140 mm. Type taken in Oregon, vicinity of Puget Sound, by Dr. Kennedy. (Acad. Nat. Sci. Phila., no. 1080.)



Strigamia epileptica Wood, holotype

1. Head and prehensorial segment, dorsal view. 2. Prehensors. 3. Sternite of third segment. 4. Caudal end, ventral view (the segments somewhat telescoped).

Tomotaenia imperialis (Brolemann) (=*parviceps*, var.). This was based on a female with 83 pairs of legs taken in Washington. Its length is given as 68 mm. The one character given in Brolemann's description that might be regarded as possibly distinctive is the presence of a median longitudinal sulcus on the basal plate, not usually present or obvious in *parviceps*. However, occasional specimens of the latter species show a median white line from beneath the surface which it is thought is what Brolemann's specimen shows.

Genus **KORYNIA** Chamberlin

Korynia Chamberlin, 1941, Ann. Ent. Soc. America, vol. 34, p. 774.

This genus is closely related to *Tomotaenia* in having the coxal pores concentrated along and beneath the last sternite. It is known from species occurring in the Southwest from California to Texas. They are small, slender forms with coxal pores reduced in number, the new species described below being the largest so far known.

Korynia auxa new species

Color of preserved type reddish fulvous, the tergites in part with a deeper spot toward each border. Body very slender.

The head small, a little narrowed cephalad, with anterior margin convexly rounded; about equal in length and breadth; frontal line distinct.

Prehensors when closed attaining anterior margin of head; claws armed at base with a rather small, slenderly conical tooth, the other joints unarmed. Prosternum showing no chitinous lines; anterior margin with excision acute.

Dorsal plates not sulcate, the anterior ones somewhat irregularly rugose. Spiracles all circular. Sternites with a median sulcus; moderately puncto-rugose.

Last sternite broad, strongly narrowed caudad, trapeziform. Coxal pores few, along and beneath the sternite. Last dorsal plate shield-shaped but caudally subtruncate. Last intertergite separate from the pleurites which are well developed.

Anal legs of male crassate, not compressed, the claw reduced to a mere point.

Pairs of legs, 73. Length, 38 mm.

Locality.—California, Squaw Valley. One male taken Mar. 23, 1941, by S. and D. Mulaik. Differing from previously known species in larger size and greater number of legs.

Neotropical Miridae, LXIX: A Remarkable New Genus of Phylini (Hemiptera)

By José C. M. Carvalho,* Museu Nacional, Rio de Janeiro, Brazil

Among the neotropical mirids in the collection of the U. S. National Museum, the author found a remarkable new genus of the tribe Phylini herewith described and figured. This work constitutes a portion of a study concerning Miridae in the U. S. National Museum. I am indebted to Dr. Reece I. Sailer who is in charge of the Heteroptera collection.

HAMBLETONIOLA n. gen.

Phylinae, Phylini. Genus of small size, body slightly ovoid, smooth, covered by very long and erect pubescence intermixed with silvery, flat and remumbent hairs. Head rounded in front, inclined, vertex smooth, convex with posterior margin straight; eyes of median size, sessil, touching the anterior margin of pronotum and reaching distinctly beyond the lateral margins of anterior angles of pronotum, smooth posteriorly; seen from the side, frons noticeably rounded, eyes somewhat compressed, distant from gula by a space about half the height of one eye, clypeus not separated from frons by a suture, vertical; rostrum reaching apex of hind coxae, the first joint noticeably incrassate.

Antennae inserted near the anterior margin of eye, distinctly above the inferior margin of orbita, segment I short, incrassate towards the apex; segment II about three times as long as first and about as thick as the latter, narrowed at extreme apex and base, covered by long, erect and somewhat silky hairs, their length equal to or more than diameter of segment; segment III ovoid, almost globose (female) or ovoid narrowed apically (male), strongly narrowed basally and apically, beset with long, black scale-like or flattened hairs; segment IV short, laminate with a narrow cylindrical base. In the nymph this segment

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shows remarkable variation since it assumes the color and shape which is to be found on the third segment of adults. It bears also a fossa near apex in which there can be found many very fine hairs (Figs. B, C). The third antennal segment on the adults is the thickest of all.

Pronotum somewhat rectangular, without collar or calli, disc flat, posterior margin almost straight, posterior angles rounded, lateral margins blunt, narrowing towards the head, the anterior angles in contact with eyes, smooth, beset with long erect hairs and scale-like recumbent pubescence; mesoscutum broadly uncovered; scutellum moderately convex, provided with long hairs and scale-like pubescence.

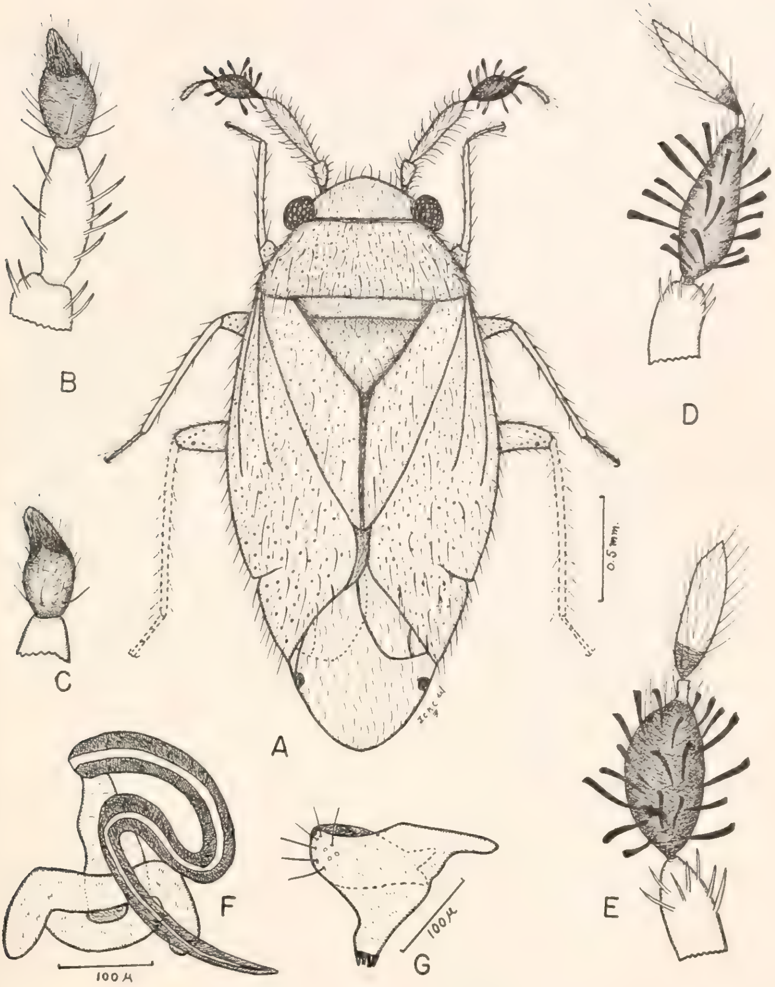
Hemelytra with clavus wider towards the apex, embolium distinct only on basal half, becoming gradually wider and less distinct towards the cuneus, cubital vein distinct on basal half of corium, cuneus about as long as wide at base, cuneal fracture small with distinct incisure, entire surface of hemelytra covered with long erect hairs and flattened, recumbent ones showing silvery reflection under incident light; membrane with two areolae, the apical angle or larger areola widely rounded.

Legs relatively short, femora incrassate, the tibiae beset with long whitish spines, about as long as wide diameter of tibia, intermixed with short and fine hairs, tarsi long, claws with pseudarolia easily visible, reaching beyond middle of claw.

Type of genus: Hambletoniola antennata n. sp.

This genus belongs to the group of Phylini with scale-like pubescence intermixed with common hairs and differs from others due to its very peculiar thickened and ovoid third antennal segment. Besides the antennae it is also characteristized by its long tibial spines, long pubescence of body and type of pseudarolia.

It is with pleasure that I name this genus for Dr. E. H. Hambleton of the U. S. Department of Agriculture, who has contributed greatly to the advancement of neotropical entomology. Dr. Hambleton was also my first teacher in entomology and I am much indebted to him for his direction and encouragement.



Explanation of Figures

A. *Hambletoniola antennata* n. sp., female, holotype. B. Antennal segments III and IV of nymph (dorsal view). C. Antennal segment IV of nymph (front view). D. Antennal segments III and IV of male. E. Antennal segments III and IV of female. F. Phallus. G. Left paramere.

Hambletoniola antennata n. sp. (Figs. A, D, E)

Characterized by its color, structure of antennae and male genitalia.

Male: Length 2.8 mm., width 1.2 mm. *Head:* length 0.2 mm., width 0.8 mm., vertex 0.45 mm. *Antennae:* segment I, length 0.1 mm.; II, 0.4 mm.; III, length 0.25 mm., width 0.14 mm.; IV, 0.2 mm. *Pronotum:* length 0.4 mm., width at base 1.0 mm. *Rostrum:* length 0.85 mm., segment I, length 0.28 mm.; II, 0.28 mm.; III, 0.11 mm.; IV, 0.21 mm.

Color: whitish yellow sprinkled with small roundish brown dots and silvery pubescence; eyes brownish; second antennal segment brownish orange to black, with dark scale-like hairs, third segment black at base; body covered by minute brown spots and silvery flat recumbent hairs, the spots are not to be seen on mesoscutum and extreme base of corium; membrane hyaline with one roundish black spot beyond the apex of cuneus; underside concolorous with brownish spots on the pleural region, more numerous on propleura; femora and tibiae with brown to black spots, more numerous on anterior surface of femora; rostrum dark at apex; base of first antennal segment and sometimes antennal peduncle and portion of gena brownish to orange in color.

Genitalia: Phallus (Fig. F) of the *Phylini* type. Left paramere (Fig. G) also typical for the tribe, with a few dorsal setae and a somewhat two-lobed left branch.

Morphological characters as given for genus.

Female: Identical with male in color and dimensions. Third antennal segment more ovoid, almost globose. In the male this segment is distinctly narrowed towards the apex (Figs. D & E).

Host plant: Leucophylum sp.

Holotype: male, MEXICO (Brownsville, Texas, V. 5. 39, 31903) on *Leucophylum*. *Allotype:* female. *Paratypes:* male, female and nymph, same data as type, in the collections of the United States National Museum and of the author (type USNM No. 61996).

A New North American Eupogonius with Note (Coleoptera: Cerambycidae)

By Josef N. Knull, Department of Zoology and Entomology, Ohio State University

In my studies of Cerambycidae, the following new species was discovered:

Eupogonius arizonensis n. sp.

Female.—Narrow, elongate; ground color reddish brown, clothed with irregular patches of recumbent white and yellowish pubescence, longer brown hairs on dorsal surface, antennae and legs.

Head convex; surface finely punctured, clothed with light colored hairs, allowing ground color to show; eyes fringed with yellowish white recumbent pubescence, separated on vertex length of eighth antennal segment; antennae extending to about apex of elytra when laid along side, ratio of lengths of segments 1 to 11, 26:6:34:36:16:16:15:12:12:9:11, segments with recumbent hairs sparse, longer dark hairs numerous.

Pronotum wider than long, widest in middle, about as wide at base as at apex; sides subparallel, lateral tubercle small, acute; disk convex, a transverse depression at base; surface coarsely, densely, irregularly punctured, recumbent pubescence, allowing sculpture to show. Scutellum semicircular, pubescent.

Elytra at base much wider than pronotum; sides subparallel, apices separately rounded; disk convex; surface coarsely punctured, punctures becoming very fine toward apex, recumbent pubescence short, allowing sculpture to be visible.

Abdomen beneath coarsely, sparsely punctured, last sternite slightly emarginate, surface clothed with recumbent short pubescence, longer hairs arising from punctures.

Length 6 mm.; width 2 mm.

Holotype ♀ and *paratype* labeled Ruby, Arizona, Aug. 4, 1953, D. J. & J. N. Knull, collectors. In collection of author.

This species is closest to *E. pauperi* Lec. It can be distinguished by the narrow elongate form, small lateral tubercles, coarse sculpture of pronotum and sparse pubescence of dorsal surface.

Eupogonius fulvovestitus Schffr.

I erroneously synonymized this species in 1946. Specimens are at hand from Hidalgo Co., Texas, March 26, 1953 and May 23, 1951, D. J. & J. N. Knull, collectors. In addition to the smooth areas on head and pronotum mentioned by Schaeffer (1905), the scutellum is glabrous, which will distinguish it from other members of the genus in our fauna.

References

Dillon, L. S. and E. S. 1953. Ent. News 64: 260–261.
Knull, J. N. 1946. Ohio Biol. Sur. Bull. 39: 1–354.
Schaeffer, C. F. A. 1905. Brook. Inst. Arts and Sci. 1: 124–140.

Replacement of a Preoccupied Generic Name (Orthop.: Acrid.)

In a recent publication (Trans. Amer. Entom. Soc., LXXIX, pp. 121, 124 (1953)) I proposed the name *Loveridgea* for a subgenus of African Pyrgomorphinae (Orthoptera; Acrididae). My friend Mr. Arthur Loveridge, to whom the new entity was dedicated, has advised me that *Loveridgea* was used in Reptiles in 1951 by Vanzolini (Herpetologica, 7, p. 114). Unfortunately the "Zoological Record" list of new generic and subgeneric names proposed in 1951 was not available until after my paper had gone to press, although a full check had been made up to and including 1950. In place of my preoccupied *Loveridgea* I wish to propose *Loveridgacris,* to retain its association with the eminent student of African zoology to whom it was originally dedicated.—James A. G. Rehn.

A European Weevil in North America

By Elbert L. Sleeper, Department of Zoology and Entomology, Ohio State University, Columbus 10

In May, 1953, a small series of a weevil from Delaware was sent to the author. In October, 1953, three Pennsylvanian examples of this same species were sent to the author by D. G. Kissinger of Washington Missionary College, Takoma Park, Washington, D. C. At this time Mr. Kissinger stated that he believed it to be an import. Comparison of it with European material by W. J. Brown of the Division of Entomology, Department of Agriculture, Ottawa, Canada and the author proved this species to be *Gymnaetron pascuorum* (Gyll.).

G. pascuorum may be distinguished from other North American members of the genus as follows: smaller and narrower (length 1.6–2.2 mm., width 0.8–1.1 mm.); black, the antennae, elytra, legs, and tarsi reddish brown, the base of the elytra and the sutural line frequently black; vestiture of fine, sparse, prostrate setae, except on elytra where the setae are coarser and erect. The tibiae of both sexes are mucronate.

This species is generally distributed in Europe and is recorded as breeding in *Plantago spp.* The North American specimens examined were from the following localities: Van Dyke, Del., V–13–52, H. E. Milliron, on alfalfa; Newark, Del., several dates from May to August in 1952–53, on strawberry, potatoes, and alfalfa; Lebanon S. F., Del., V–9–53, C. A. Triplehorn; New Castle Co., Del., May and July, 1952; and Leipsic, Del., May, 1952. Mr. Kissinger has collected this species at Stoney Creek Mills, Pennsylvania, VIII–24–52, and Pottstown, Pennsylvania, VII–28–53. Examples of *pascuorum* are in the following collections: Delaware University, Entomological Collection, Canadian National Collection, D. G. Kissinger Collection, and the author's collection.

It is possible that this species was first introduced, in nursery stock from Europe, in the vicinity of Wilmington, Delaware. The bulk of the material examined was collected within a 40-mile radius of that city.

It is doubtful if this species will be of economic importance in the United States. The occurrence of it on the aforementioned plants is probably accidental. It is possible that this weevil might cause some damage to alfalfa, if the female should oviposit in the blossoms. *G. teter* (Fab.) oviposits in the ovaries of mullein, *Verbascum thapsus* (L.). The immature stages are passed in the seed pod of mullein.

Cryptophyllaspis liquidambaris Kotinsky in New Jersey (Homoptera)

This species, known as the sweet gum scale, was collected during June, 1953, on sweet gum from Cape May, N. J. This insect inhabits the undersides of the leaves, the oval or circular female scale making a tiny, blunt, conical mound or gall on the upper leaf surface and living on the lower surface in the tiny open pit beneath the mound. It has been recorded from Florida, Georgia, Mississippi, Louisiana, District of Columbia, Texas, Ohio and New York City, but not previously from New Jersey. Apparently this species escaped notice for years, partly because of its unimportance, but principally because collectors are getting scarcer and scarcer.—H. B. Weiss.

The Continuing Abundance of Lacebugs in New Jersey

In Entomological News for July, 1952, attention was called to the unusual abundance of lacebugs in New Jersey on various host plants during the summer of 1951. During the summers of 1952 and 1953 this abundance continued, with some abatement in 1952. *Stephanitis rhododendri* Horv., on rhododendron, *Stephanitis pyriodes* Scott on azaleas, *Corythucha ciliata* Say on American buttonwood and European planes, *Corythucha cydoniae* Fitch on *Crataegus,* continued to build up numerically during the summer months of 1953 until by the end of the season every leaf on many of their host plants was whitened by adult and nymphal feeding. According to U. S. Weather Bureau records, the winters of 1951–52 and 1952–53 were mild, the latter, even more so than the former. As a result the mortality among overwintering adults and eggs was reduced and the way was paved for heavy summer populations.—H. B. Weiss.

Records of the Order Zoraptera from South Carolina[1]

By W. St. Amand

In his synopsis of the order Zoraptera (Proc. Ent. Soc. Wash. 40: 57–87, 1938), Gurney states that *Zorotypus hubbardi* Caudell is probably abundant in the Southern States. He lists records from Maryland, Virginia, North Carolina, Illinois (?), Arkansas, Louisiana and Texas. It has been reported from Alabama by Valentine and Wilson (Ent. News 60: 180–1, 1949) and from Georgia by Riegel (Ent. News 61: 124, 1950). In addition, Copeland (in press) reports it from Kentucky, Tennessee and Mississippi.

A record of the occurrence of *Zorotypus hubbardi* from South Carolina seems worthy of note. Collections were made at sawdust piles at the following localities: 8 mi. N of Travelers Rest, Greenville Co.; 4 mi. NW of Newberry County line, Laurens Co.; Edgefield, Edgefield Co.; and near Kirksey, Greenwood Co. At Edgefield specimens were found with termites and at Kirksey with ants but there is no evidence of more than incidental association. All individuals collected are wingless.

Current Entomological Literature

Compiled by VENIA T. PHILLIPS, Librarian

Academy of Natural Sciences of Philadelphia

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania pertaining to entomology, including all arthropods except Crustacea. Coverage will be world-wide as regards major contributions to systematics as well as for all papers on morphology, physiology, embryology, etc. In addition, for species from the Americas and the Pacific (Nearctic, Neotropical and Polynesian regions) all minor contributions to taxonomy, distribution, etc., will also be recorded.

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[1] Contribution number 97 from the Department of Zoology and Entomology, The University of Tennessee, Knoxville, Tenn.

This list gives references of the year 1953 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

This number is devoted entirely to papers appearing in the Transactions of the 9th International Congress of Entomology, held in Amsterdam, August 17–24, 1951. Publ. at The Hague, v. 1, 1115 pp., 1952; v. 2 (Entitled "Symposia"), 361 pp., 1953.

GENERAL—Atkinson, D. J.—The natural control of forest insects in the tropics. 2: 220–23. **Barnes, H. F.**—Outlines of insect phenology. 2: 163–73, ill. **Betrem, J. G.**—Interrelation and interaction of biotic and abiotic factors in some tropical insects. 1: 791–94. (Repeated in 2: 278–81.) **Bishopp, F. C.**—Insecticide problems in the United States of America. 1: 1023–29. **Bonnet, P.**—Proposition d'une reglementation pour la formation des termes scientifiques compises (choix de la voyelle de liaison). 1: 189–93. **Box, H. E.**—The history and changing status of some neotropical insect pests of sugar cane. 2: 254–59. **Dammerman, K. W.**—Proposals concerning the nomenclature of family names and of names of economically important insects, to be submitted to the IXth International Congress of Entomology at Amsterdam. 1: 203–05. **Dowden, P. B.**—Natural control of forest insects in the United States. 2: 215–19. **Dufrenoy, J. & J. L. Plumb.**—A graphical calculator for statistical analysis of experiments in entomology. 1: 1068–70, ill. **Dupuis, C.**—Données sur la morphogenese des genitalia males des insectes, leur importance pour une nomenclature rationnelle de ces structures. 1: 151–54. **Edney, E. B.**—An electrical hygrometer suitable for microclimatic measurements. 1: 525–30, ill. **Ferrière, C.**—Le fardeau des vieilles especes inconnues. 1: 194–96. **Franz, H.**—Die bedeutung der terricolen arthropoden für bodenbeurteilung und bodenverbesserung. 1: 439–43. —Die bedeutung vergleichender untersuchungen an biocoenosen für die lösung historischtiergeographischer probleme. 1: 547–52. **Haarløv, N.**—Microarthropods from some Danish soils. 1: 424–27, ill. **Hemming, F.**—Seven problems of zoological nomenclature awaiting decision: an appeal to specialists for advice. 2: 37–47. **Jucci, C.**—Simbiosi e filogenesi negli insetti. 1: 449–53. **Kangas, E.**—On population regulation of forest insects living in tree rind, in Finland. 2: 224–28. **Knipling, E. F. & F. C. Bishopp.**—Progress in medical entomology in the United States. 1: 929–34. **Leatherdale, D.** —Zoocecidia: the need for correlated study. 1: 514–18. **Leclercq, M.**—Application de l'entomologie a la medecine legale. 1: 920–22. **Leefmans, S.**—Practical application of insect phenology. 2: 190–99, ill. **Lindroth, C. H.**—Influence of Pleistocene climate changes on the insect fauna of northern Europe. 2: 145–53. **Regnier, R. & B. Trouvelot.** —La position de la recherche biologique en entomologie appliquee, historique, développement, perspectives. 1: 41–50. **Reichmuth, W.**—Über biologische erscheinungen des unterschiedlichen verhaltens von insekten unter dem einfluss biotischer und abiotischer faktoren. 1: 495–501, ill. **Rivnay, E.**—The threshold of reproduction in insects and its application to agriculture. 1: 607–10. **Schneider, F.**—Epidemiologie einiger gambirinsekten auf Sumatra. 2: 266–71, ill. **Schwerdtfeger, F.**—Die natürliche regelung der populationsdichte bei den forstinsekten. 2: 203–09, ill. **Shulov, A.**—A method for evaluation of the strength of venom of spiders. 1: 956–58. **Solomon, M. E.**—The population of storage pests. 2: 235–48, ill. **Stammer, H. J.**—Die bedeutung der insekten für die besiedelung kleiner lebensstätten. 1: 535–38. **Strickland, A. H.**—The assessment of insect populations in relation to crop losses. 1: 611–18. **Thalenhorst, W.**—Die bedeutung des einzelgeschehens in der gradologie. 1: 531–34. **Tuxen, S. L.**—Proposal for a glossary of terms used for description of genitalia in insects. 2: 34. **Varley, G. C.**—Ecological aspects of population regulation. 2: 210–14. **Vecht, J. Van der.**—On some aspects of the numerical variation of insects in the tropics. 2: 272–77. **Williams, C. B.**—Graphical and statistical methods in the study of insect phenology. 2: 174–89, ill. —The migration and drift of insects and its international aspect. 1: 63–68.

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ANATOMY, PHYSIOLOGY, MEDICAL—**Agrell, I.**—Mobilization of metabolic energy during insect metamorphosis. 2: 73–77. **Berre, J. R. Le.**—Contribution a l'etude du phenomene de la diapause embryonnaire chez un acridien, Locusta migratoria gallica REM. (phasis transiens). 1: 209–15. **Bodenheimer, F. S.**—Arrested development and arrested activity in insect life. 1: 21–40. —Outlines of the epidemiology of agricultural pests in a subtropical climate.

2: 251–53. **Bodenstein, D.**—Endocrine control of metamorphosis with special reference to holometabola. 2: 58–62. **Bounhiol, J. J.**—Rôle du corpus allatum dans la métamorphose des insectes. 2: 63–72, ill. **Busnel, R. G.**—La fluorescyanine et l'acide folique, pterines de Bombyx mori L. 1: 356–58. **Busvine, J. R.**—Laboratory investigations with insecticide-resistant houseflies. 2: 335–39. **Buzzati-Traverso, A. & R. Scossiroli.**—Interspecific crosses between Drosophila species living on different continents. 1: 246–49. **Carayon, J.**—Les phenomenes particuliers, qui accompagnent la fecondation chez certains hemipteres Nabidae. 1: 259–62. **Cloudsley-Thompson, J. L.**—Diurnal rhythms. 1: 305–10. **Dethier, V. G.**—Host plant perception in phytophagous insects. 2: 81–89. **Dierick, G. F. E. M.**—Some data on the composition of the waxy layers on eggs of the European red spider in different stages of development. 1: 295–302. **Dubois, K. 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ENTOMOLOGICAL NEWS

Vol. LXV JUNE, 1954 No. 6

Notes on Odonata of Surinam
VI. The Nymph of Neoneura joana Will.

By D. C. Geijskes, P. O. B. 306, Paramaribo

Of the genus *Neoneura* the nymph of only one species (*N. carnatica* Selys) is described by Needham [1] from Cuba. I add here the description of a second species of which exuviae were found recently on rocks in the Maroni-River in Surinam. The identification of the species was secured from a female hatching from one of the cast skins.

Neoneura joana has originally been described from British Guyana.[2] Although the species is not yet recorded from Surinam, it is a very common damsel fly along the rivers in this country. Their nymphs breed on the rocks in the rapids of the rivers.

Description of the Nymph

Head broad and flat, quadrangular, hind angles behind the eyes prominent and spinulose. Eyes large, not bulging. Antennae long and slender, equally brown, paler at the articulations, seven jointed, relative length of the segments 4 : 5 : 9 : 7 : 4 : 3 : 2, segments 3–7 with an apical fringe of hairs.

Mentum broad triangular, reaching backward to between the coxae of the front legs. Only one pair of mental setae present. Sides of mentum in the apical half armed with a row of about 14 short and strong spines. Median lobe prominent and rounded, finely denticulated. Lateral lobes with four (females) or five (males) setae; movable hook large and curved inward at the end, end hook well developed, separated by a deep cleft from the terminal border, which consists of a straight cut off tooth.

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[1] Needham, J. G. 1939. Nymph of the Protoneurine genus Neoneura (Odonata). Ent. News 50: 241–245.

[2] Williamson, E. B. 1917. The genus Neoneura. Trans. Amer. Ent. Soc. 43: 215–218.

Maxillae on top of lacinia with six large teeth, the third the largest, followed at the lower side by a row of 5–7 smaller ones and at the upper side by two long spines; more below a secondary row of 8–11 smaller plumose setae each side. Galea on top beset with many long plumose setae.

Mandibles with four (right side) or five (left side) stout teeth unequal in size. Right mandible on inner side with one blunt tooth, left mandible with two such teeth.

Prothorax with prominent lateral lobes, the hind margin somewhat excavated. Synthorax not as broad as head, marked with three darker longitudinal bands over the sides; the empty wing pads of the exuviae reaching to the seventh abdominal segment (in the full grown nymph they may reach to the fifth segment).

Legs rather long, the femora flattened to some extent, marked with two cross bands in the middle part, tibiae with one cross band in the basal half. Margins of femora and inner side of tibiae with a row of short spines. Apical inner side of tibiae armed with many short plumose setae, the joints of the tarsi along the under side with two rows of such setae.

Abdomen tapering to the end, the first five segments without setae, the last five segments spinulose especially along the lateral and apical margins. Mid-dorsal line of segm. 9 and 10 without spines. Segments 4–9 marked with three to two darker longitudinal lateral bands, segm. 10 with the exception of the mid-dorsal stripe dark.

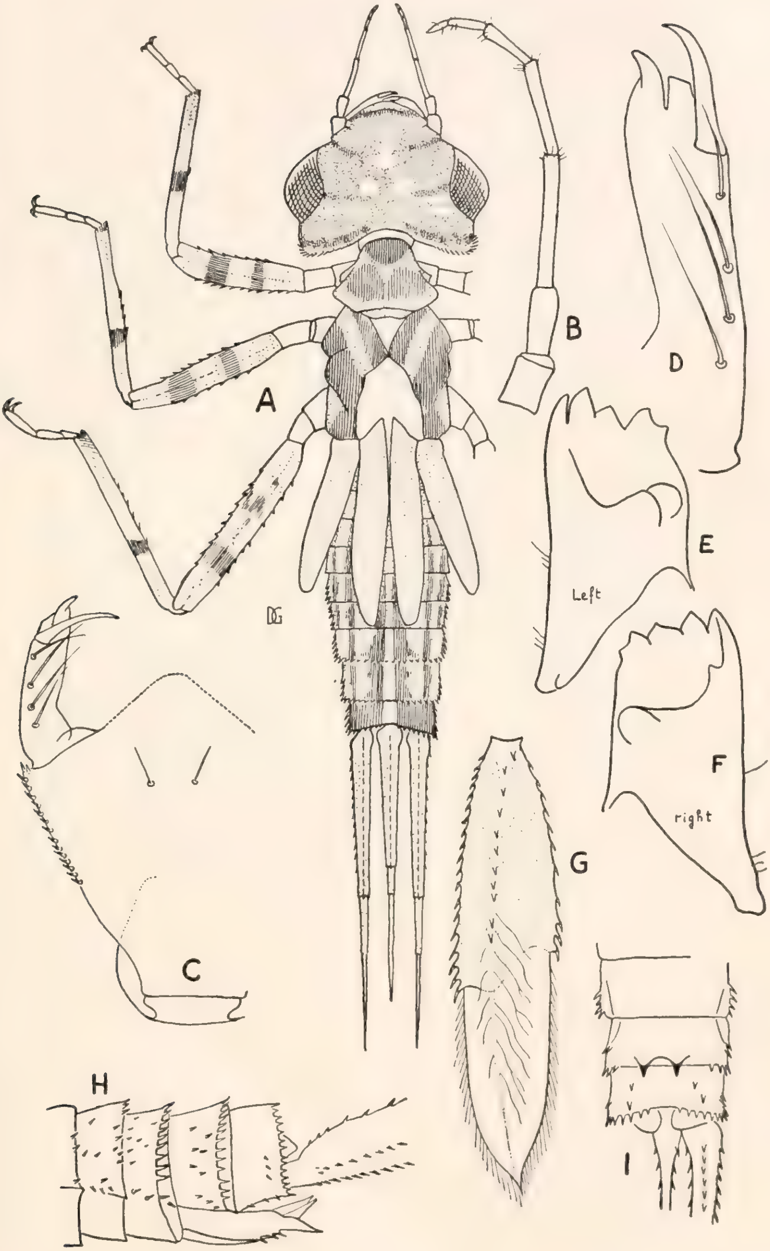
Gonapophyses of female reaching behind end margins of segm. 10; inner and outer pair of the same length, outer pair on the

---

EXPLANATION OF FIGURES

Nymph of *Neoneura joana* Will. (female exuviae)

A. Dorsal view. B. Right antenna. C. Mentum, inner side. D. Right mental lobe, inner side. E. Left mandible. F. Right mandible. G. Right lateral gill. H. End of female abdomen from left side. I. End of male abdomen from below.


A
B
D
E
Left
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right
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ventral margin with three dents, terminal spine large sharp-pointed. Gonapophyses of male with the two sharp points reaching just over the hind margin of segm. 9. Gills long lanceolate, tips acute, the sclerotized basal part reaching to the middle at the dorsal margin or farther along the ventral margin; the margins and mid-rib armed with a row of short spines, 11 along the dorsal side, 19 along the ventral side and 10–11 along the mid-rib. Apical half of gills with simple and some branched gill-veins, the margins finely fringed with long soft hairs.

Total length (exuviae) 12–15 mm., gills 4–5 mm. (Examined 2 ♂, 8 ♀ exuviae.)

Of this species only the cast skins were found attached to rocks and larger stones in the rapids of Lamaké and in the Apoma falls in the Maroni River between Surinam and French Guyana (October 1953). Imagines of this species were common at that moment on the same places.

This nymph differs from that of *N. carnatica* by the number of setae at the lateral mental lobe (4–5 in *N. joana,* 3 in *N. carn.*), by the less hairy legs, the longer and more spiny gills and the spinulose abd. segm. 6–10.

The two species have in common: the large truncate head, one pair of mental setae, the row of marginal spines in the apical half of mentum, and the pointed abd. gills divided in a thick carinate basal part and a thin leaf-like apical portion.

It may be noted that the nymph of *Neoneura joana* has much in common with the nymph of *Aeolagrion demerarum* Will. described and figured by myself in Ann. Ent. Soc. Amer. 1941, 34: 722–24, fig. 2.

Notes on the Biologies of three Species of Bombyliidae, with a Description of one New Species

By J. C. Hall, Citrus Experiment Station,
Riverside, California

These records on biology, while not conclusive, are published in order that more interest might be created toward studying the habits of this fascinating group of flies. Comparatively little is known about the habits of the family, and much work remains to be done in this respect.

The author wishes to express his thanks to the two men, who, through their efforts, have made this paper possible: Mr. H. B. Leech of the California Academy of Sciences and Mr. R. C. Bechtel of the University of California at Davis.

In December of 1952, Mr. Bechtel collected a total of 70 nests of the mud-dauber wasp, *Sceliphron caementarium* (Drury), from various areas around Davis, California. From three of these nests emerged three specimens of *Toxophora virgata* O.S. Of the three nests, one was from the inside wall of a small pumphouse and the other two were collected from the underside of a cement bridge. The nests were kept in the laboratory until the spring of 1953. Following is a list of the hymenopterans which emerged from the three nests. From nest number 20, four *Ancistrocerus tuberculocephalus sutterianus* (Saussure), and one *Stenodynerus minimoferus* Bohart; from nest number 24, three *Rygchium foraminatum blandinum* (Rohwer); and from nest number 25, three *Stenodynerus minimoferus*.

Nothing definite can be said about the specific host of *Toxophora virgata* as all three species of hymenopterans, mentioned above, fall within the category of the hosts recorded in the literature. It is unlikely, but not an impossibility, that the fly larvae fed on the *Sceliphron* larvae.

The genus *Toxophora* is found in both Europe and North America, and most of the host records are found from the former continent. Rearing and host records are not numerous and are scattered, but from the information available, a good indication of the hosts of these flies may be obtained. Séguy (1926) [1] records the genus *Toxophora* as "Parasites des Guêpes solitaires (*Eumenes, Pelopaeus, Odynerus*)." Osten Sacken (1877) [2] records a species of *Toxophora* reared from the nest of *Eumenes fraterna* Say, "feeding either upon the caterpillar stored up in the nest, or upon the young larvae themselves." Austen (1937) [3] records *Eumenes pomiformis* Fabr. being attacked by the larvae of *Toxophora maculata* Rossi.

In 1951 Mr. Leech collected a quantity of *Ceanothus thrysiflorus* Esch. wood, which was heavily infested with the anobiid beetle, *Ptinus acuminatus* Casey. The wood was placed in a jar and kept there in an attempt to rear some of the beetles. A few months later three bombyliids emerged from the wood, along with several anobiids. The flies proved to be an undescribed species of the genus *Eclimus.*

The cast pupal skins were left protruding, for most of their length, from old anobiid burrows. It was immediately assumed that the beetles served as the hosts. But, at a later date, the spring of 1952, Mr. Leech again collected some wood, this time dead chaparral pea, *Pickeringia montana* Nutt., which was heavily infested with another anobiid, *Vriletta decorata* Van D. From this wood one specimen of *Anthrax oedipus* Fabr. emerged. In this case, by careful tracing it was found that the fly came from a small hymenopterous cocoon in an old anobiid burrow, which had been provisioned with spiders. This later case then makes the previous assumption, that the *Eclimus* species came from the anobiids, open to suspicion as to the host.

The author has been unable to locate any records in the literature on the host, or hosts, of the genus *Eclimus.* He has observed *E. luctifer* O.S. ovipositing in an old log lying near a small stream. All attempts to recover either eggs or larvae failed, and no more information is available at this time.

It was impossible to determine the hymenopteran that served as the host for *Anthrax oedipus.* Species of the genus *Anthrax* have been recorded several times as being parasitic on the larvae of solitary bees and fossorial wasps. Osten Sacken (1877) states that he has observed *A. oedipus* in the Sierra Nevada Mountains, persistently flying around a hole in a pine log, probably containing the nest of some hymenopteran. He also records other species in the genus as being reared from *Pelopoeus, Cemonus, Chalicodoma,* and probably *Megachile*. Brooks (1952)[4] records and describes the pupal case of *A. irrorata* Say, a species closely related to *A. oedipus,* as being reared from *Megachile nivalis* Fries.

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[1] Séguy, E. Faune de France, Paris 13: 220.

[2] Osten-Sacken. Bull. U. S. Geol. Geog. Survey of Terr. 3: 265–66.

[3] Austen, E. E. Brit. Mus. Nat. Hist. Publ., London, p. 77.

The following is a description of the adult and cast pupal skin of the *Eclimus* species, reared from ceanothus wood. The author takes pleasure in naming this fly after Mr. H. B. Leech.

Eclimus leechi n. sp.

Body black; wings hyaline, subcostal, costal, marginal, and first basal cells with faint infuscations, faint spots on *r–m* crossvein, base of second submarginal cell and at the bases of all the posterior cells.

Female. Front gray pollinose, blackish in center from vertex to a little beyond middle, black pilose in middle, a few whitish scales present; face gray pollinose, white pilose along oral margin; clypeus when rubbed, shining; antennae black, segment one three times longer than second, shorter than third, third segment broadest before middle, tapering to blunt apex, style wanting, segments one and two with black hair above, white below; proboscis longer than head height; palpi half as long as proboscis, first segment twice as long as the second, slender, segment two broad, tapering to a point, with short black hair; occiput gray pollinose on sides, black on upper one-fourth, white pilose, a few black hairs on vertex, golden-yellow tomentum on vertex, a few golden-yellow scales along hind margins of eyes. Thorax black, white pilose, dense golden-yellow tomentum overall, three, long, black bristles at root of wings; scutellum black, thickly covered with golden-yellow tomentum, long white hair on posterior margin; pleura gray pollinose, white pilose, tomentum want-

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[4] Brooks, A. R. Canadian Ent. 84: 370.

ing; legs black, tibiae somewhat brownish; coxae white pilose, fore and middle femora entirely white pilose, hind femora white pilose on basal half, grading to iridescent black on apical half, with two short, slender bristles on under surface; halteres with stems whitish, knobs black; wings hyaline, following cells faintly infuscated: subcostal, costal, marginal, first basal, area near stigma darker, faint spots on *r–m* cross-vein, base of second submarginal cell and at bases of second, third, and fourth posterior cells. Abdomen black, first segment white pilose, rest of dorsum with short, black pile, sides of segments one to four white pilose, five to seven black pilose, entire dorsum golden-yellow tomentose, thicker on median line and posterior margins of each segment; venter white pilose and tomentose, segments six and seven with black pile. Genitalia orangish, with a few golden-yellow hairs.

Male unknown.

Type female. Mill Valley, Marin County, CALIFORNIA, VI–25–51 (H. B. Leech). Deposited in California Academy of Sciences. Paratypes. 2 females, same data as type. One specimen in the California Academy of Sciences, the other in the author's collection.

The following is a description of the cast pupal skin of *Eclimus leechi*.

Light yellow, with yellow setae and reddish-brown tubercles.

Head. Round in front view. Cephalic tubercles widely spaced, long, and straight, somewhat ridged near base; a small tubercle arises behind and a little inward of each large cephalic tubercle; frontal tubercle trifid, dorsal tubercle the largest, slightly proclinate, two ventral tubercles small, without long tapering point characteristic of other tubercles, ridged near base; middle of front with lateral depressions; a single pair of setae located behind each cephalic tubercle, about one-half as long as the tubercles; mouth parts short, not extending length of femora; labrum with a pair of small tubercles, a very small seta alongside each tubercle. Dorsum of thorax bare, a thin seta dorso-laterally above root of wings; wings extending to the third abdominal segment, without setae or tubercles. Segment one of abdomen with a median-dorsal row of small spines, short setae interspersed between each spine, lateral area bare, three short setae at union of dorsum and venter; segments two to six with a median-dorsal row of larger spines, slightly curved upward, a variable number of short setae interspersed between each spine, a pair of setae at each end of each row of spines, three setae at union of dorsum and venter; seventh segment with a row of short spines, and interspersed setae on posterior margin; eighth segment bare, with a pair of slightly curved terminal tubercles; entire venter of abdomen bare.

The pupal skins are attached to the type and paratype specimens.

A Moisture Gradient Method for Rearing Diptera from Moist Humus

By W. A. McDonald, University of California, Los Angeles

A convenient rearing method has been used with great success by workers at U.C.L.A. to obtain new or little-collected Diptera, especially Nematocera, from moist humus, and to associate the larval and pupal stages with the adult. The procedure involves collecting damp humus or leaf mold in the field and transferring a portion or it to a can set in a pan of water and covered by a rearing cage. Thus moisture gradient is established which will permit immature forms present in the humus to develop and emerge into the cage for a considerable period following their collection.

At U.C.L.A. we use discarded syrup cans 9½″ wide by 12½″ high which contain about one cubic foot of loosely-packed humus over a two-inch layer of salt-free sand. The can, with several small holes punched through its bottom, is set into a pan in which a two-inch water level is maintained. Over the humus can is placed one of our mosquito-rearing cages, measuring 15″ by 15″ by 36″ and made of 32-mesh plastic screen stretched on a frame of ¾″ fir, with ⅛″ masonite top ond bottom, a window of cellulose acetate film and a muslin sleeve. The screen, window and sleeve are held to the frame by thin strips of masonite and small brads. A hole is cut in the cage's bottom to admit the top of the humus can.

After the adult flies have emerged and hardened for a day or so, they can be collected with a 24″ straight glass aspirator on a rubber mouth-suction tube which is inserted into the cage through the muslin sleeve. The flies are easily sucked from the sides of the cage where they tend to congregate, especially if the cage is placed by a window. Nematocera can be blown into an alcohol vial, other Diptera into a cyanide tube. Some of the humus should also be put into a Berlese funnel to obtain the Acarida, Apterygota and larval insects present.

Our first experience with this method, using wet humus found below a perennial spring, produced a great variety of Tendipedidae and Heleidae, including a new species of *Helea* (W. W. Wirth, personal communication to J. N. Belkin), a few fungivorids, sciarids, psychodids, lauxaniids, rhagionids and all stages of *Tabanus monoensis* Hine, adults of which emerged five weeks after the date of collection.

From two to five minutes a day is sufficient time for aspirating the adults and replenishing the water level. Should space for the apparatus be lacking at the laboratory or university, it can be kept in the worker's garage or back porch and inspected by him each day on his way to or from work. When the humus finally ceases to yield specimens it can be examined for pupal skins, long-lived larvae, etc. The adults, in alcohol, are sorted to family and stored for eventual shipment to specialists.

The little time required by the method just described should appeal to entomologists involved in insect surveys as well as Diptera specialists who must often associate immature and adult stages.

Current Entomological Literature

Compiled by **VENIA T. PHILLIPS**, Librarian

Academy of Natural Sciences of Philadelphia

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania pertaining to entomology, including all arthropods except Crustacea. Coverage will be world-wide as regards major contributions to systematics as well as for all papers on morphology, physiology, embryology, etc. In addition, for species from the Americas and the Pacific (Nearctic, Neotropical and Polynesian regions) all minor contributions to taxonomy, distribution, etc., will also be recorded.

This list gives references of the year 1953 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

GENERAL—Arthur, A. P.—A plastic cage for rearing small parasites. [43] 86: 33–35, ill., 1954. **Ascher, K. R. S. & Z. Levinson.**—Chemicals affecting the preimaginal stages of the housefly. I. A review of the literature. [123] 14: 235–59. **Ballard, R. C.**—A modification of the Huffaker cage for confining mites or small insects. [76] 46: 1099. **Bellinger, P. F.**—Salmon's fluid, a new mounting medium for slides of small larvae and larval pelts of Lepidoptera. [85] 7: 170–71. **Brown, L. R.**—A standardized laboratory apparatus for using the speedlight in photography of insects and other small objects. [85] 7: 148–66, ill. **Colas, G.**—Insectes—Quatre-vingts agrandissements précédés d'une introduction et d'une table descriptive. Paris, Libr. des Arts Decoratifs, 1952. 6 p., 46 pls. (Review by J. L. Gressitt [52] 46: 578.) **Dales, R. P.**—A simple trap for tipulids. [60] ser. 4, v. 89: 304. **Eyndhoven, G. L. van.**—Symposion "Insecten en viren," Verslag van de 24e vergadering der afdeling voor toegepaste entomologie. (English summaries.) [57] 15: 33–64, 1954. **Gressitt, J. L.**—"Splendeur et diversité du monde des insectes." [52] 46: 464. **Hanson, J. F.**—A simple technique for improving and accelerating KOH clearing of insects. [36] 49: 21, 1954. **Hayward, K. J.**—An entomologist in Argentina. IV. Journey to Misiones. [Ent. Record] 66: 12–16, 1954. **Heineman, B.**—Musing in European museums. [85] 7: 167–70, ill. **Kellen, W. R.**—Laboratory experiments on the role of insects in sewage oxidation ponds. [76] 46: 1041–48.

Leston, D.—Entomological labels: a warning concerning "Ball-pen" ink. [60] ser. 4, v. 89: 291. **Linssen, E. F.**—Entomological photography in practice. London, Fountain Press, 112 p., ill. 32.6 s. (Reviewed in [28] 3: 692–93.) **Linssen, E. F. & L. H. Newman.**—The observer's book of common British insects and spiders, London, F. Warne & co., ltd. 128 p., ill. 5 shillings. (Reviewed in [28] 3: 684–85.) **Mariani, M.**—Compendio di entomologia medica. Edizione Agap, Palermo, 1952, 202 p., ill. 2,000 lire. (Review in [28] 3: 683–84.) **Marié, P.**—Migrations suicides de certains insectes. [59] 9: 71–75. **Munroe, E. G. & P. B. Beirne.**—Central file of figures of insect types. [Science] 119: 3A, 1954. **Osburn, W. S.**—Techniques of population analysis of alpine orthoptera. [J. Colo.-Wyo. Acad. Sci.] 4: 61–62. **Pearcy, W. G.**—Some limnological features of Clear Lake, Iowa. [73] 28: 189–207. (Insects, p. 198–201.) **Pickens, A. L.**—Intraspecific problems in the taxonomy of insect caste. [Insectes Sociaux, Paris] 1: 71–74, 1954. **Prasad, S. K.**—A convenient device for sampling mustard aphids population. [Indian J. Ent.] 15: 270–71. **Rautenberg, L. E.**—Beiträge zur kenntnis alter naturwissenschaftlicher werke. Beitrag 2 (Andreas Friedrich Happe: Abbildungen des schmetterlinge, 1783–85). [28] 3: 618–26, ill. **Rawlins, W. A.**—A method for rearing the onion maggot in insectary cultures. [76] 46: 1101. **Rockstein, M.**—A portable refrigerating device for the collection and rapid inactivation of small biological specimens. [52] 46: 544–46, ill. **Roonwal, M. L. and others.**—A systematic catalogue of the main identified entomological collection at the Forest Research Institute, Dehra Dun. [Indian Forest Leaflet] 121: 39–187 (S). **Shaw, F. R. & G. Clark.**—Notes on certain ectoparasites in Massachusetts. [76] 46: 1093–94. **Snyder, T. E.**—Bibliography of termites (Announcement of the author's forthcoming book). [Pest Control] 22: 22, 1954. **Strickland, E. H.**—Polythene-stoppered vials for storing insects in alcohol. [43] 85: 470–71, ill.

BIOGRAPHIES, OBITUARIES—Carpenter, Geoffrey Douglas Hale, 1883–1953.—Obituary notice. [28] 3: 694. **Draudt, Max,** 1875–1953.—Obituary. [28] 3: 694–95. **Fischer, Johann Gotthelf,** 1771–1853.—Zum 100. todestag des naturforschers Johann Gotthelf von Waldheim, von Johannes W. E. Büttner. [28] 3: 616–18. **LeMarchand, S.,** 1876–1953.—Obituary notice. [85] 7: 166. **Plummer, Charles Carlton,** 1907–1952.—Obituary, with port. by A. C.

Baker. [76] 46: 1126–27. **Rapp, Otto,** 1878– .—Otto Rapp zum 75. geburtstag, (Bibl. & port.) by W. Liebmann. [Ent. Blätter] 49: 129–32. **Strecker, Ferdinand Heinrich Herman,** 1836–1901.—An interview with Herman Strecker in 1887, by H. B. Weiss. [101] 61: 201–210. **Swain, Ralph Brownlee,** 1912–1953.—Bio-bibliography by G. G. Becker. [101] 61: 185–88. **Thurman, Deed Cleveland, Jr.,** 1921–1953.—Obituary by H. L. Trembly. [76] 46: 1126. **Watari, Masami,** 1897–1953.—Obituary notice. [85] 7: 166. **Yuasa, Hiraharu,** 1900–1953.—Obituary, with port. by R. Roberts. [76] 46: 1127–28.

ANATOMY, PHYSIOLOGY, MEDICAL—Allegret, P. —Influence de la rétention expérimentale de la soie sur la métamorphose de Galleria mellonella (L.). [2] 238: 623–25, 1954. **Allen, W. R. & A. G. Richards.**—Oxygen uptake of muscle homogenates from three species of insects, in the presence of added succinate, cytochrome c, and phosphate. [44] 32: 1–8, 1954. **Arvy, L. & M. Gabe.**—Données histophysiologiques sur la neuro-sécrétion chez les insectes paléoptères (Ephéméroptères et Odonates). [Pubbl. Staz. Zool. Naopli] 24, suppl.: 54–55, 1954. (Abstract.) —Données histophysiologiques sur les glandes endocrines céphaliques de Brachyptera risi Morton. (Plecoptera.) [24] 90: 105–22, ill. **Babers, F. H. & J. J. Pratt.**—Resistance of insects to insecticides: the metabolism of injected DDT. [76] 46: 977–82. **& C. C. Roan.**—The dehydrochlorination of DDT by resistant cockroaches. [76] 46: 1105. **Baldwin, W. F. & H. L. House.**—Studies on effects of thermal conditioning in two species of sawfly larvae. [44] 32: 9–15, 1954. **Berim, N. G. & I. M. Edel'man.**—O fiziologicheskoi ustoichivosti nasekomykh k DDT i GKHTSG i putiakh ee preodoleniia. [Ent. Obozrenie] 32: 15–26, 1952. **Boistel, J.**—Etude fonctionnelle des terminaisons sensorielles des antennes d'hyménoptères. [Compt. rendus, Soc. Biol., Paris] 147: 1683–68, ill. **Bounhiol, J. J., M. Gabe & L. Arvy.** —Données histophysiologiques sur la neuro-sécrétion chez Bombyx mori L. et sur ses rapports avec les glandes endocrines. [Pubbl. Stz. Zool., Napoli] 24, suppl.: 52–53, 1954. **David, J.**—Étude expérimentale des variations de l'aile vestigiale de Drosophila melanogaster Meigen. [39] 87: 431–60, ill. **Day, M. F., I. F. B. Common, J. L. Farrant & C. Potter.**—A polyhedral virus disease of a pasture caterpillar, Pterolocera amplicornis Walker (Anthelidae). [Austr. J. Biol. Sci.] 6: 574–79, ill. **& M. J. Bennetts.**—Healing of gut wounds in the mosquito Aedes argypti (L.) and the leafhopper Orosius argentatus (Ev.). [Austr. J. Biol. Sci.] 6: 580–85, ill. **De Lerma, B.**—Osservazioni sulla neurosecrezione in Hydrous piceus L. (Coleotteri). [Pubbl. Staz. Zool. Napoli] 24, suppl.: 56–57, 1954. (Abstract.) **Dupont-Raabe, M.**—Réparition des activités chromatiques dans le ganglion susaesophagien des phasmides: mise en évidence d'une région sécrétoire dans la partie deuto et tritocérébrale. [2] 238: 950–51, 1954. —Le rôle endocrine du cerveau dans la régulation des phénomènes d'adaptation chromatique et de la ponte chez les phasmides. [Pubbl. Staz. Zool. Napoli] 24, suppl.: 63–66, 1954. **Fisk, F. W. & J. A. Isert.**—Comparative toxicities of certain organic insecticides to resistant and non-resistant strains of the German cockroach, Blatella germanica (L.). [76] 46: 1059–62, ill. **Fraenkel, G. & Peh-I Chang.**—Manifestations of a vitamin B (Carnitine) deficiency in the larvae of the meal worm, Tenebrio molitor L. [113] 27: 40–56, ill., 1954. **French, E. W.**—Carnitine (Vitamin B_1) as a nutritional requirement for the confused flour beetle. [98] 173: 173, 1954. **Gaumont, R.**—Les modalités de la piqûre chez les larves primaires de quelques Chermesidae pendant la diapause. [2] 238: 730–32, 1954. **Gilmour, D.**—Localization of the magnesium-activated apyrase of insect muscle in the sarcosomes. [Austr. J. Biol. Sci.] 6: 586–90. **Grandori, L. & E. Carè.**—Studio anatomoistologico sul sistema neurosecretore in Musca domestica e Calliphora erythrocephala. [Pubbl. Staz. Zool. Napoli] 24, suppl.: 50–51, 1954. **Gray, H. E. & G. Fraenkel.**—The carbohydrate components of honeydew. [113] 27: 56–65, 1954. **Haskins, C. P. & R. M. Whelden.**—Note on the exchange of ingluvial food in the genus Myrmecia. (Formicidae.) [Insectes Sociaux, Paris] 1: 33–37, 1954. **Haydak, M. H.**—Influence of the protein level of the diet on the longevity of cockroaches. [52] 46: 547–60. **Ichikawa, H., K. Yashika & J. Nishiitsutsuji.**—Studies on the insect metamorphosis. III. Activity of the brain in the post-embryonic development of lepidopterans. [Mem. Coll. Sci., Univ. Kyoto, Ser. B] 20: 145–50. **Ivanov, T. S.**—Anatomiia perifericheskoi nervnoi sistemy briushnykh segmentov Aziatskoi saranchi (Locusta migratoria L.). [Ent. Obozrenie] 32: 148–59, ill., 1952. **Ivanova-Kazac, O. M.**—Embrional'noe razvitie naezdnika Mestocharis militaris R.-Kos. (Chalcididae.) [Ent. Obozrenie] 32: 160–66, ill., 1952. **Kaji, S.**—Transplantation of thoracic legs of the Eri-silkworm, Philosamia cynthia ricini. [Annot. Zool. Jap.] 26: 224–27. **Kozhanchikov, I. V.**—K voprosu o zhiznennom termicheskom optimume. IX. Amplituda temperatury kak faktor v razvitii neparnogo i dubovogo shelkopriadov. [Ent. Obozrenie] 32: 27–42, 1952. **Krackiewicz, Z.**—Studia nad chromosomami Lasioptera rubi Heeg. (Cecidomyidae.) [Sprawozdania Towarzystwo Nauk. Warszawskie, Wyd. IV, Biol.] 43: 58–60, 1950/51. (1953.) **Lavie, P.**—L'enregistrement thermique continu dans les populations d' "Apis mellifica" au cours de l'hivernage. [Insectes Sociaux, Paris] 1: 39–48, ill., 1954. **Momma, E.**—Anomalous divisions of the grasshopper germcells induced by the treatment with α- or β-Peltatin. (Studies on abnormal nuclear divisions, 8.) [J. Fac. Sci., Univ. Hokkaido, Ser. VI] 11: 502–08, ill. **Narayanan, E. S.**—Physiology of pupation in fruit-flies. [Sci. Repts. Indian Agr. Res. Inst. 1951] p. 79–80. —Studies on factors governing development of winged aphids, Rhopalosiphum pseudobrassicae (Davis). [Sci. Reports Indian Agr. Res. Inst. 1951] p. 78–79. **Oertel, E., R. B. Emerson & H. F. Wheeler.**—Transfer of radioactivity from worker to drone honey bees after ingestion of radioactive sucrose. [52] 46: 596–98. **Pain, J.**—La "Substance de fécondité" dans le développement des ovaires des ouvrières d'abeilles (Apis mellifica L.). Critique des travaux de Müssbichler. [Insectes Sociaux, Paris] 1: 59–70, 1954. **Pielou, D. P. & R. F. Glasser.**—Thermal tolerance in Macrocentrus ancylivorus Roh. (Braconidae). [44] 32: 30–38, 1954. **Possompes, B.**—Données expérimentales sur l'activation de l'anneau de Weismann par le cerveau chez Calliphora erythrocephala Meig. [Pubbl. Staz. Zool. Napoli] 24, suppl.: 59–62, 1954. **Ray, D. T. & P. W. Whiting.**—An X-ray dose-action curve for eye-color mutations in Mormoniella. [30] 106: 100–06, 1954. **Rockstein, M. & A. S. Kamal.**—Distribution of digestive enzymes in the alimentary canal of larvae of flies of medical and veterinary importance. [113] 27: 65–70, 1954. **Sigot, A.**—Contribution a l'étude de la sensibilité de la sensibilité héréditaire au gaz carbonique chez la drosophile. [39] 87: 335–413. **Slipka, J.**—Le systêhne tracheal des larves de diptères-nematocera du point de vue de l'evolution. [45] 49: 6–14, 1952. **Thomsen, E.**—Experimental evidence for the transport of secretory material in the axons of the neurosecretory cells of Calliphora erythrocephala Meig. [Pubbl. Staz. Zool. Napoli] 24, suppl.: 48–49, 1954. —Observations on the cytology of neurosecretion in various insects (Diptera and Hymenoptera). [Pubbl. Staz. Zool. Napoli] 24, suppl.: 46–47, 1954. (Abstract.)

Tuzet, O. & J.-F. Manier.—La spermatogenèse d'Himantarium gabrielis Meinert. (Chilopoda.) [18] ser. 11, v. 15: 231–39, ill. —Les spermatozoïdes de quelques myriapodes chilopodes et leur transformation dans le réceptacle séminal de la femelle. [18] 11th ser., 15: 221–30, ill. **Wheldon, R. M. & C. P. Haskins.**—Cytological and histological studies in the Formicidae. I. Chromosome morphology and the problem of sex determination. [52] 46: 579–95, ill. **Wigglesworth, V. B.**—Neurosecretion and the corpus cardiacum of insects. [Pubbl. Stazione Zool. Napoli] 24 Suppl.: 41–45, 1954. —Surface forces in the tracheal system of insects. [116] 94: 507–22, ill. **Wilkinson, P. R.**—Observations on the sensory physiology and behaviour of larvae of the cattle tick, Boophilus microplus (Can.). [Austr. J. Zool.] 1: 345–56, ill. **Yanagishima, S.** and others. —Experimental study on the phenomenon of so-called "Preadaptation" in Drosophila melanogaster. [Mem. Coll. Sci., Univ. Kyoto, Ser. B] 20: 163–70. **Yushima, T. & H. Chino.** —On the occurrence of an acetylcholine-like substance in some insect eggs. (1) On the muscle-stimulation substance in eggs of the rice stem borer, Chilo simplex, and cabbage armyworm, Barathra brassicae. [Annot. Zool. Jap.] 26: 228–32, ill. —(2) The change in acetylcholine-like substance content during embryonic development in some insect eggs. (Ibid.) p. 233–37.

ARACHNIDA AND MYRIOPODA—Allred, D. M. & D. E. Beck.—A new species of Acomatacarus (Acarina, Trombiculidae) from Utah. [66] 13: 87–90, ill. **Baker, E. W. & A. E. Pritchard.**—A key to mites of the genus Pentamerismus, with descriptions of three new species (Acarina: Phytoptipalpidae). [153] 11: 353–66, ill. **Beier, M.**—Pseudoscorpione aus El Salvador und Guatemala. [Senckenbergiana] 34: 15–28, ill. (*). **Boudreaux, H. B.**—A simple method of collecting spider mites. [76] 46: 1102–03. **Carvalho, J. C. M.**—Araneida. (See Hemiptera.) **Cook, D. R.**—Preliminary list of the Arrenuri of Michigan. Part 1. The subgenus Arrenurus. [11] 73: 39–58, ill., 1954 (*k). **Edmunds, L. R.**—An additional record of the lonestar tick, Amblyomma americanum (Linn.) in Ohio. [106] 54: 98, 1954. **Furman, D. P.**—A revision of the genus Pneumonyssus (Acarina: Halarachnidae). [80] 40: 31–42, ill., 1954. **Goodwin, M. H., Jr.**—Observations on the biology of the lizard mite Geckobiella taxana (Banks) 1904 (Acarina: Pterygosomidae). [80] 40: 54–59, ill., 1954. **Kaestner, A.**—Die mundwerkzeuge der spinnen, ihr bau, ihre funktion und ihre bedeutung für das system. Pt. 3, Die cheliceren der labidognatha (Dipneumones). [Mitt. Zool. Mus. Berlin] 29: 3–54, ill. **Kaston, B. J.**—Is the black widow spider invading New England? [Science] 119: 192–93, 1954. **Lane, J. E.**—A redescription of the American lizard mite, Geckobiella texana (Banks), 1904, with notes on systematics of the species. (Acarina: Pterygosomidae.) [80] 40: 93–99, ill., 1954. **Levi, H. W.**—New and rare Dipoena from Mexico and Central America (Araneae, Theridiidae). [13] no. 1639, 11 p., ill. —Spiders of the genus Dipoena from America north of Mexico (Araneae, Theridiidae). [13] no. 1647, 38 p., ill. (*). **Mulaik, S. & D. M. Allred.**—New species and distribution records of the genus Caeculus in North America. (Acarina, Caeculidae.) [56] 56: 27–40, ill., 1954. **Roewer, C. F.**—Neotropische Gagrellinae (Opiliones, Arachnidae). [Mitteil. Zool. Mus. Berlin] 29: 180–265, ill. (*k). **Tuzet & Manier.**—(See Anatomy.) **Walter, C. & C. Bader.**—Mission scientifique de l'Omo. Hydracarina. [Mém. Muséum Nat. Hist. Nat. Paris, Ser. A] 4: 87–236, ill., 1952. **Wilkinson, P. R.**—Boophilus. (See Anatomy.)

SMALLER ORDERS—Ando, H.—Studies on the pleuropodia of Odonata. [Sci. Repts. Tokyo Bunrika Daigaku, Sect. B] 7: 167–81, ill. **Arvy, L. & M. Gabe.**—The intercerebralis-cardiacumallatum system of some Plecoptera. [30] 106: 1–14, ill., 1954. **Barlet, J.**—Morphologie du thorax de Lepisma saccharina L. (Apterygote thysanoure). II. Musculature. [136] 89: 214–36, ill. **Berner, L.**—Phoretic association between a species of Simulium and a mayfly nymph, with a description of the nymph. [19] ser. 12, v. 7: 116–21, ill., 1954. **Broadhead, E.**—A new parthenogenetic psocid from stored products, with observations on parthenogenesis in other psocids. (Corrodentia.) [60] 90: 10–16, 1954. **Chao, H.-F.**—The external morphology of the dragonfly Onychogomphus ardens Needham. [131] 122: no. 6, ill. (Review by F. C. Fraser in [60] ser. 4, v. 89: xlvii–viii.) **Dias dos Santos, N.**—Fauna do Distrito Federal. I. Descrição do alótipo macho de Erythrodiplax chromoptera Borror, 1942 (Odonata-Libellulidae). [48] 4: 247–50, ill. **Eads, R. B.**—An addition to the Texas flea fauna. [80] 40: 102, 1954. **Edmunds, G. F., Jr.**—New species of Utah mayflies. II. Baetidae, Centroptilum. [56] 56: 1–4, ill., 1954. **Emerson, K. C.**—A review of the genus Menopon Nitzsch, 1818 (Mallophaga). [19] ser. 12, v. 7: 225–32, ill., 1954 (S). **Freeman, P.**—Ephemerida. (See Diptera.) **Hase, A.**—

Über menschenläuse (Anoplura). Bibliographien, geschichte der forschungen, eier und mikropylapparat. [Zeit. f. Parasitenkunde] 16: 145–190, ill., 1954. **Machado Filho, J. P.**—Contribuição ao conhecimento do gênero Parasparatta Burr, 1911, com descrição de uma espécie nova (Dermaptera-Labiidae). [48] 4: 243–46, ill. **Margabandhu, V. & T. N. Ananthakrishnan.**—Annotated list of Indian Thysanoptera (Suppl.). [Indian J. Ent.] 15: 183–90. **Moretti, G.**—Bilancio ecologico di una raccolta di tricotteri delle Marche, Umbria ed Abruzzo. [Boll. di Zool., Torino] 19: 245–69, 1952. **Scott, D. B.**—The economic biology of Collembola. [76] 46: 1048–51. **Smit, F. G. A. M.**—Results of the Archbold expeditions. No. 70, Siphonaptera from Netherlands New Guinea. Part 1. [13] no. 1638, 53 p., ill. (*). **Snyder, T. E.**—Termitidae. (See General.) **Tjønneland, A.**—A contribution to the zoogeography of Norwegian dragonflies. [Univ. Bergen, Årbok 1952, Natur. rekke] 15, 44 p., maps. **Tuzet, O. & J.-F. Manier.**—Syncystis aeschnae n. sp., néogrégarine (= Schizogrégarine Léger 1900) parasite des larves d'Aeschna. [18] ser. 11, v. 15: 241–46, ill.

ORTHOPTERA—Amand & Cloyd.—(See Diptera.) **Brookes, H. M.**—The morphological development of the embryo of Gryllus commodus Walker. [Trans. Roy. Soc. S. Austr.] 75: 150–59, ill., 1952. **Dupont-Raabe, M.**—(See Anatomy.) **Fisk & Isert.**—(See Anatomy.) **Ivanov, T. S.**—(See Anatomy.) **Joly, P. & L.**—Résultats de greffes de Corpora allata chez Locusta migratoria L. [18] ser. 11, v. 15: 331–45, ill. **Lawson, F. A.**—Structural features of cockroach egg capsules IV. The oötheca of Parcoblatta uhleriana. [82] 27: 14–20, ill., 1954. **Makhotin, A. A.**—Vzaimootnoshenie osnovykh grupp prygaiushchikh priamokrylykh i morfologiia ikh iaitseklada. [Ent. Obozrenie] 32: 126–36, ill., 1952. **Momma, E.**—(See Anatomy.) **Osburn, W. S.**—(See General.) **Piquett, P. G. & J. H. Fales.**—Life history of Blaberus giganteus (L.). [76] 46: 1089–90, ill. **Princis, K.**—Kleine beiträge zur kenntnis der blattarien und ihre verbreitung. VI. [Ent. Tids.] 74: 203–13, 1954 (S). **Slifer, E. H.**—The permeability of the sensory pegs on the antennae of the grasshopper (Acrididae). [30] 106: 122–28, ill., 1954. **Tuzet, O. & J. Rambier.**—Recherches sur les grégarines des orthoptéroides. [18] ser. 11, v. 15: 247–50, ill. **Voy, A.**—Sur l'existence de deux catégories d'oeufs dans la ponte globule du phasme (Clonopsis gallica Charp.). [2] 238: 625–27, 1954.

HEMIPTERA—Balachowsky, A. S.—Les cochenilles de France, d'Europe, du Nord de l'Afrique et du Bassin Mediterranéen. VII. Monographie des Coccoidea Diaspidinae—IV. Actùalites scientifiques et industrielles 1202, Hermann & Cie. Paris, 207 p., ill. (Rev. in [28] 3: 686.) **Bradley, G. A.**—A new species of Cinara (Aphididae) from Saskatchewan. [43] 85: 431–32, ill. **Carvalho, J. C. M.**—Neotropical Miridae, LXVII: Genus Ranzovius Distant, predaceous on eggs of Theridion (Araneida) in Trinidad. [19] ser. 12, v. 7: 92–96, ill., 1954 (*). —Neotropical Miridae LXXI: Genus Cyrtocapsus Reuter with descriptions of four new species. [36] 49: 12–17, ill., 1954. **China, W. E.**—Developmental colour change in species of Flatidae (Fulgoroidea). [19] ser. 12, v. 7: 150–52, 1954. **Dashman, T.**—The unguitractor plate as a taxonomic tool in the Hemiptera. [52] 46: 561–78, ill. **Dispons, D.**—Etude sur le genre Ischnonyctes Stal. Biologie d'Ischnonyctes barbatus (Lucas). (Emesinae.) [Rev. Franc. Ent.] 20: 231–71, ill. **Drake, C. J.**—Synonymic data and descriptions of new genera and species of Tingidae. [66] 13: 91–99. **Johnson, C. G.**—Aphid migration in relation to weather. [Biol. Reviews] 29: 87–118. **Knowlton, G. F.**—Capitophorus and Amphorophora aphid notes. [36] 49: 8–11, 1954. **Kormilev, N. A.**—Notes on neotropical Aradidae III. On some apterous Mezirinae from Brazil. [48] 4: 229–42, ill. (*). **Leston, D.**—Dorsal abdominal glands in Heterogaster urticae (F.) (Lygaeidae). [60] 90: 20, 1954. **Narayanan, E. S.**—Aphids. (See Anatomy.) **Porter, T. W.**—Brachypterous form of Hebrus consolidus Uhler (Hebridae). [82] 27: 38–39, ill., 1954. **Southwood, T. R. E.**—Interspecific copulation between Nabis ferus (L.) and N. rugosus (L.). [60] ser. 4, v. 89: 294. **Turnipseed, G. F. & C. F. Smith.**—Life history and control of scales on apples in North Carolina. [76] 46: 969–72. **Wolfe, H. R. & R. W. Anthon.**—Transmission of the western X-disease virus from sweet and sour cherry to peach by two species of leafhoppers. [76] 46: 1090–92.

LEPIDOPTERA—Allegret, P.—Variations individuelles des facteurs d'excrétion protidique avant la mue nymphale chez Galleria mellomella (L.). [2] 238: 518–20, 1954. **Bauer, D. L.**—Butterflies at water holes in Central Arizona. [85] 7: 146–47. **Bennett, W. H.**—The pupal morphology of the pine needle miner (Gelechiidae). [56] 56: 41–42, ill., 1954. **Blais, J. R.**—Effects of the destruction of the current year's foliage of balsam fir on the fecundity and habits of flight of the spruce budworm. [43] 85: 446–48. **Brandt, H.**—Schmetterlinge, Erster teil, Insekten Deutschlands I. Heidelberg, C. Winter, 176 p., ill. DM 8.90. (Reviewed in [28] 3: 689–90.) **Burkhardt, C. C. & R. H. Painter.**—Weight differences in southwestern corn borer larvae, Diatraea grandiosella Dyar, reared on teosinte in Kansas in 1952. [82] 27: 21–23, ill., 1954. **Day, M. F. and others.**—(See Anatomy.) **Dondale, C. D.**—(See Hymenoptera.) **Evans, W. H.**—A catalogue of the American Hesperiidae, indicating the classification and nomenclature adopted in the British Museum (Nat. Hist.) Pt. 3, Pyrginae. London, Br. Mus. (Nat. Hist.), 246 p., 53 pls. **Ferguson, D. C.**—Revision of the occiduaria-argillacearia complex of the genus Itame, with descriptions of new races (Geometridae). [43] 85: 453–61, ill. **Fox, R. M.**—Speciation in the Ithomiidae. [J. Colo.-Wyo. Acad. Sci.] 4: 61. **Flanclemont, J. G.**—A new species of Copablepharon (Noctuidae). [36] 49: 25–27, ill., 1954. **Henson, W. R., R. W. Stark & W. G. Wellington.**—Effects of the weather of the coldest month on winter mortality of the lodgepole needle miner, Recurvaria sp., in Banff national park. [43] 86: 13–19, 1954. **Ichikawa and others.**—(See Anatomy.) **Judd, W. W.**—The white veined dagger, Simyra henrici Grt. (Phalaenidae), and its parasites reared from cat-tail, Typha spp. [Proc. Nova Scotia Inst. Sci.] 23: 115–19, 1954. **Keen, E. P.**—Correction of identity of the Douglas-fir cone moth. [76] 46: 1107–08. **Koch, Manfred & K. Herschel.**—Falter bei tag und nacht. Neumann-Verlag, Radebeul & Berlin, 288 p., ill., DM 12. (Reviewed in [28] 3: 689.) **Komárek, J. & V. Skuhravý.**—Der einfluss der temperatur auf die periodische massenvermehrung des schwammspinners (Lymantria dispar L.). [45] 49: 15–30, 1952. **Latham, R.**—Fagitana littera reared from larva. [85] 7: 172. **Lesse, H. de.**—Formules chromosomiques nouvelles chez les Lycaenidae (Rhopalocera). [2] 238: 514–16, ill., 1954. **McElvare, R. R.**—Schinia macroptica Smith, a synonym (Phalaenidae). [36] 49: 22–23, ill., 1954. **McGuffin, W. C.**—Descriptions of larvae of forest insects: Syngrapha, Autographa (Phalaenidae). [43] 86: 36–39, 1954 (k). **MacKay, M. R.**—The last-instar larva of Epinotia medioviridana (Kft.) (Olethreutidae). [43] 85: 404–07, ill. **Randle, W. S.**—Observations on the life-history of Calephelis borealis. Part II. [85] 7: 133–38. **Rautenberg, L. E.**—(See General.) **Remington, C. L.**—Two new genes, "whitish" and "blonde," producing pale males and females of Colias philodice. [85]

7: 139–45. **Sevastopulo, D. G.**—The apparent influence of isolation in some species of Geometridae. [85] 7: 172. **Smith, R. C. & W. W. Franklin.**—The garden webworm—Loxostege similalis Guen. as an alfalfa pest in Kansas. [82] 27: 27–38, ill., 1954. **Stark, R. W.**—Distribution and life history of the lodgepole needle miner (Recurvaria sp.) (Gelechiidae) in Canadian Rocky Mountain parks. [43] 86: 1–12, ill., 1954. **Wyatt, A. K.**—On the larva of Lytrosis unitaria. [36] 49: 7, 1954.

DIPTERA—Aczel, M. L.—The genus Trupanea Schrank in the neotropical region. (Tephritidae.) I. The diespasmena-group. [48] 4: 273–86, ill. (*k). **Alexander, C. P.**—New species of crane-flies from South America. Part XV. [52] 46: 599–617, ill. **Amand, W. St. & W. J. Cloyd.**—Parasitism of the grasshopper, Chortophaga viridifasciata (Degeer) (Locustidae), by dipterous larvae. [80] 40: 83–87, ill., 1954. **Ascher & Levinson.**—(See General.) **Barigozzi, C.**—Controllo genotipico ed ambientale della struttura dei nuclei salivari durante lo sviluppo dei ditteri. [Boll. di Zool., Torino] 19: 397, 1952. **Berner, P.**—(See Smaller orders.) **Borg, A. F. & W. R. Horsfall.**—Eggs of floodwater mosquitoes. II. Hatching stimulus. [52] 46: 472–78. **Briseño Iragorry, L., L. Vargas & A. Díaz Nájera.**—Algunos caracteres morfologicos de Simulium amazonicum Goeldi, 1905. [Rev. Inst. Salubr. y Enferm. Trop., Mexico] 13: 243–46, ill. **Curran, C. H.**—The Asilidae and Mydaidae of the Bimini Islands, Bahamas, British West Indies. [13] no. 1644, 6 p. (*). —Notes and descriptions of some Mydaidae and Syrphidae. [13] no. 1645, 15 p. (*). **David, J.**—Drosophila. (See Anatomy.) **Day & Bennetts.**—(See Anatomy.) **Domenichini, G.**—Degeeria luctuosa (funebris) Meig. (Larvaev.) e Perilitus deceptor Wesm. (Hym., Bracon.) parassiti di Melasoma Aenes L. adulta. [Boll. Zool. Agrar. e Bachi.] 19: 139–76, ill. **Freeman, P.**—A new African species of Silumium in phoretic association with mayfly nymphs. [19] ser. 12, v. 7: 113–21, ill., 1954. **& B. de Meillon.**—Simuliidae of the Ethiopian region. London, Br. Mus. (Nat. Hist.) 224 p., 68 figs. **Freire-Maia, N. I. F. Zanardini & A. Freire-Maia.**—Chromosome variation in Drosophila immigrans. [48] 4: 303–11, ill. **Griswold, C. L.**—Transmission of the oak wilt fungus by the pomace fly. [76] 46: 1099–1100. **Hardy, G. H.**—Reduction of the median field in the wing venation of Diptera. [60] 90: 2–3, 1954. **Hull, F. M.**—The genus Mixogaster Macquart. (Syrphidae.) [13] no. 1652, 28 p., ill. (*). **Jones,**

C. M.—Biology of Tabanidae in Florida. [76] 46: 1108–09. **Kallostian, G. H.**—Tomosvaryella lepidipes—a parasite of the geminate leafhopper. (Dorilaidae.) [76] 46: 1098–99. **Lal, R. & S. B. Lal Gupta.**—Morphology of the immature stages of Sphaerophora scutellaris (Fabr.) (Syrphidae) with notes on its biology. [Indian J. Ent.] 15: 207–18, ill. **Lee & Ryckman.**—(See Coleoptera.) **MacDougall, G. W. & R. M. Fox.**—The seasonal distribution of carrion and refuse feeding flies in Colorado Springs, Colo. [Colo.-Wyo. Acad. Sci., Jour.] 4: 57. **McLintock, J. & K. R. Depner.**—A review of the life-history and habits of the horn fly, Siphona irritans (L.) (Muscidae). [43] 86: 20–33, 1954. **Magni, G. E.**—Sex-ratio in Drosophila bifasciata. [Rendiconti Ist. Lombardo, Cl. Sci. Mat. e Nat.] 85: 391–411, 1952. **Martelli, M.**—Reperti sulla Terellia fuscicornis (Loew) (Trypetidae). [Redia] 37: 405–442, ill., 1952. **Narayanan, E. S.**—Dacus. (See Anatomy.) **Puisségur, C.**—Sur quelques parasites de carabes. [59] 9: 65–68. **Saccà, G.**—Variabilità fenotipica in Musca domestica L. [Boll. di Zool., Torino] 19: 293–96, ill., 1952. **Satchell, G. H. & A. L. Tonnoir.**—The Australian Psychodidae, Part I–II. [Austr. J. Zool.] 1: 357–48, ill. (*k). **Schlinger, E. I.**—A new Chilean species of Ogcodes Latreille (Acroceridae). [153] 11: 319–21, ill. **Shewell, G. E.**—Notes on the types of some American Agromyzidae. [43] 85: 462–70, ill. **Slipka, J.**—(See Anatomy.) **Theodor, O.**—Nycteribiidae & Streblidae. [Lindner's Die fliegen der palaearktischen region] lief 174, teil 66a & 66b, 1954, ill. (*k). **Thompson, W. R.**—The tachinid parasites of Archips cerasivorama Fitch. (2) Eusisyropa blanda O. S. [43] 85: 393–404, ill. **Vargas, L.**—Culicoides wirthomyia n. sp. y Culicoides stigmalis Wirth, 1952. [Rev. Inst. Salubr. y Enferm. Trop., Mexico] 13: 227–33, ill. **& A. Díaz Nájera.**—Simulium (Notolepria) gonzalezi n. sp. [Rev. Inst. Salubr. y Enferm. Trop., Mexico] 13: 235–41, ill. **Vizzi, F. F.**—The mouthparts of the male mosquito Anopheles quadrimaculatus Say. [52] 46: 496–504, ill. **Vockeroth, J. R.**—Musca autumnalis Deg. in North America. [43] 85: 422–23. **Yoshimoto, C. M.**—Notes on the species of Drosophilidae occurring in Kansas. [82] 27: 23–26, 1954.

COLEOPTERA—Arnett, R. H., Jr.—The oedemerid beetles of the Bimini Island group, Bahama Islands, British West Indies. [13] no. 1646, p. 13, ill. **Bap Reddy, D.**—Effect of short exposures to low temperatures on the third larval instar of the rice weevil. [Ind. J. Ent.] 15: 180–82.

& A. E. Michelbacher.—Nature of food and its influence on rice weevil. [76] 46: 1098. **Becker, E. C. & M. W. Sanderson.**—Honduras Pselaphidae. Part II. [52] 46: 437–64, ill. **Costa Lima, A. da.**—Dois coccinelideos do gênero Prodilis (= Neaporia) (Coccinelidae, Ortaliini). [48] 4: 301–02, ill. (*). **Darlington, P. J., Jr.**—West Indian Carabidae. The Bahama species. [13] no. 1650, 16 p. (*). **Davies, M. J.**—Feeding behaviour of some Amara spp. (Carabidae). [60] ser. 4, v. 89: 297. **Dietrick, E. J. & R. van den Bosch.**—Further notes on Hypera brunneipennis and its parasite, Bathyplectes curculionis. [76] 46: 1114. **Ehara, S.**—A comparative study of spermatheca in some local populations in Epilachna pustulose and E. vigintioctomaculata. [J. Fac. Sci., Hokkaido Univ., Ser. VI] 11: 401–09, ill. **Eidt, D. C.**—European wireworms in Canada with particular reference to Nova Scotian infestations. [43] 85: 408–14. **Fraenkel & Chang.**—(See Anatomy.) **Glaçon, S.**—Sur le cycle évolutif de quelques Speonomus (Bathysciinae) cavernicoles. [2] 238: 398–400, 1954. **Heyrovsky, L.**—Oncideres boliviana sp. n. ex Bolivia. (Ceramb.) [45] 49: 44–45, 1952. **Hincks, W. D.**—The Passalidae of El Salvador. [Senckenbergiana] 34: 29–35, ill. (*). **Horion, A.**—Faunistik der mitteleuropäischen käfer. Bd. III. Munchen, E. Reitter, 340 p., ill. DM 18. (Reviewed in [28] 3: 686–87.) **Knull, J. N.**—A new Euryptera and notes on other Cerambycidae. [106] 54: 129–30, 1954. **Lee, R. D. & R. E. Ryckman.**—Coleoptera and Diptera reared from owl nests. [36] 49: 23–24, 1954. **Luginbill, P., Jr.**—A contribution to the embryology of the May beetle. [52] 505–28, ill. **Martinez, A.**—Una nueva especie de Athyreus (Scarab. Geotrop.). [Muench. Ent. Ges., Mitt.] 43: 226–33 (S). **Monrós, F.**—Notes and synonyms in Chrysomelidae. [56] 56: 23–26, 1954. **Pallister, J. C.**—Homopterus hondurensis Darlington (Paussidae) from Yucatan, Mexico. [36] 49: 27–28, 1954. **Prevett, P. F.**—Notes on the feeding habits and life-history of Galeruca tanaceti L. (Chrysomelidae). [60] ser. 4, v. 89: 292–93, ill. **Puisségur, C.**—(See Diptera.) **Reichenbach-Klinke, H.-H.**—Der histologische aufbau des proventrikels der Adephaga und seine bedeutung für taxonomie und phylogenie. [Munch. Ent. Ges., Mitteil.] 43: 262–305, ill. **Sanderson, M. W.**—A revision of the nearctic genera of Elmidae. [82] 27: 1–13, ill., 1954 (*). **Scheerpeltz, O.**—Rindenbewohnende staphyliniden aus Guatemala. [28] 3: 600–10 (*k). **Schöning, R. v.**—Biologisch-ökologische untersuchungen an Byturus tomentosus Fabr. und fumatus

Fabr. [28] 3: 627–52, ill. **Sleeper, E. L.**—New Rhynchophora. I. (Anthribidae & Curculionidae). [106] 54: 117–25, ill., 1954. **Spilman, T. J.**—Corrections to Leng's catalogue and Gebien's Coleopterorum Catalogus: Tenebrionidae and Katalog der tenebrioniden. [101] 61: 215–16. **Tippmann, F. F.**—Studien über neotropische longicornier. I. [48] 181–228, ill. (*). **Uhmann, E.**—2. Nachtrag zu meiner arbeit über die "Praeimaginalstadien einiger mittelamerikanischer hispinae." [Ent. Blätter] 49: 169–84. **Vaurie, P.**—Revision of the genera Anchylorhynchus and Petalochilus of the Petalochilinae (Curculionidae). [13] no. 1651, 58 p., ill., 1954 (*). **Voss, E.**—Bemerkungen zu einigen in Guatemala gesammelten cossoninen. [28] 3: 611–15, ill. (*k). —Curculionidae: Oxycoryninae, Belinae, Archolabinae, Attelabinae, Apoderinae. [Col. Cat. Suppl.] pts. 144 & 110, 19 & 32 pp. **Watson, W. Y.**—Two new species of Coccinellidae. [43] 86: 45–47, ill., 1954. **Wolfrum, P.**—Anthribidae. [Col. Catalogus, Suppl.] pt. 102, 63 p. —Neue anthribiden aus der Zoologischen staatssammlung München. [Mitteil. Munch. Ent. Ges.] 43: 314–16 (S).

HYMENOPTERA—Baldwin & House.—Sawflies. (See Anatomy.) **Bier, K.**—Über den einfluss der königin auf die arbeiterinnen fertilität im ameisenstaat. [Insectes Sociaux, Paris] 1: 1–19, ill., 1954. **Bird, F. T.**—The use of a virus disease in the biological control of the European pine sawfly, Neodiprion sertifer (Geoffr.) [43] 85: 437–46. **& M. M. Whalen.**—A virus disease of the European pine sawfly, Neodiprion sertifer (Geoffr.) [43] 85: 433–37, ill. **Bohart, G. E.**—Honey bees attacked at their hive entrance by the wasp Philanthus flavifrons Cresson. [56] 56: 26–27, 1954. **Brown, W. L., Jr.**—The neotropical species of the ant genus Strumigenys Fr. Smith: group of elongata Roger. [101] 61: 189–99. —Remarks on the internal phylogeny and subfamily classification of the family Formicidae. [Insectes Sociaux, Paris] 1: 21–31, 1954. **Cook, T. W.**—The ants of California. Palo Alto, Calif. Pacific Books, 1953. xvi, 462 p., ill. Price $10.00. (Reviewed by G. C. Wheeler [52] 46: 618–19.) **Creighton, W. S.**—A new subspecies of Xenomyrmex stolli from northeastern Mexico (Formicidae). [13] no. 1634, 5 p., ill. —The rediscovery of Leptothorax silvestrii (Santschi) (Formicidae). [13] no. 1635, 7 p., ill. **DeBach, P.**—Thysanus flavopalliatus (Ashm.) parasitic on Comperiella bifasciata How. in California red scale. [76] 46: 1112. **Dietrick & van den Bosch.**—(See Coleoptera.) **Domenichini, G.**—Studio sulla morfologia dell'addome degli Hymenoptera Chalcidoidea. [Boll. Zool. Agrar. e Bachi.] 19: 183–298, ill. **Dondale, C. D.**—Biology of Agathis laticinctus (Cress.) (Braconidae), a parasite of the eye-spotted bud moth, in Nova Scotia. [43] 86: 40–44, ill., 1954. **Evans, H. E.**—The Mexican species of the genus Pompilus. [52] 46: 529–43, ill. (*). **Gregg, R. E.**—The soldier caste of Pheidole (Ceratopheidole) clydei Gregg (Formicidae). [13] no. 1637, 7 p., ill. **Haskins & Wheldon.**—(See Anatomy.) **Ivanova-Kazac, O. M.**—(See Anatomy.) **King, R. L. & R. M. Sallee.**—On the duration of nests of Formica obscuripes Forel. [Proc. Iowa Acad. Sci.] 60: 656–59, 1954. **Krombein, K. V.**—A Camposomeris new to the New York State list (Scoliidae). [36] 49: 28, 1954. —The wasps and bees of the Bimini Island group, Bahamas, British West Indies (Aculeata). [13] no. 1633, 29 p., ill. (*). —Wasps collected at Lost River state park, West Virginia in 1953 (Aculeata). [36] 49: 1–7, 1954. **Lavie, P.**—(See Anatomy.) **Lecomte, J.**—Essai d'une analyse causale du comportement agressif des ouvrières d'abeilles (Apis melligica). [Insectes Sociaux, Paris] 1: 49–57, 1954. **MacGillivray, M. E. & P. R. Spicer.**—Aphid parasites collected in New Brunswick in 1950. [43] 85: 423–31. **Michener, C. D.**—A genus of bees new to the Illinois region. [82] 27: 13, 1954. **Muesebeck, C. F. W.**—Three new mealybug parasites of the genus Allotropa (Platygasteridae). [36] 49: 18–21, ill., 1954. **Narayanan, E. S. & K. Lal.**—Studies on chalcid egg parasites of Pyrilla spp. occurring in Delhi. [Indian J. Ent.] 15: 173–79. **Oertel & others.**—(See Anatomy.) **Pain, J.**—(See Anatomy.) **Pasteels, J.**—Prodromes d'une faune des Tenthredinoidea de l'Afrique noire. I. Argidae. [Mem. Soc. Ent. Belgique] 26: 1–128, ill. **Pielou & Glasser.**—(See Anatomy.) **Sakagami, S. F.**—Arbeitsteilung der arbeiterinnen in einem zwergvolk, bestehend aus gleichaltrigen volksgenossen. Beiträge zur biologie des binenvolkes Apis mellifera L., II. [J. Fac. Sci., Hokkaido Univ., Ser. VI] 11: 343–400, ill. **Smith, M. R.**—A new Camponotus in California apparently inhabiting live oak, Quercus sp. (Formicidae). [101] 61: 211–14. **Smith, M. R.**—A new name for Martia Forel. [36] 49: 17, 1954. **Wheldon & Haskins.**—(See Anatomy.) **Wilson, E. O.**—The ecology of some North American dacetine ants. [52] 46: 479–95. —A new interpretation of the frequency curves associated with ant polymorphism. [Insectes Sociaux, Paris] 1: 75–80, 1954.

List of Titles of Publications Referred to by Numbers in Entomological Literature in Entomological News.

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84. Lambillionea (Union Ent. Belge). Brussels.
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86. Louisiana Academy of Sciences, Proceedings. New Orleans.
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94. Musei Zoologici Polonici. Fragmenta Faunistica. Warsaw, Poland.
95. Naples Univ. Instituto e Museo Zoologico, Annuario.
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140. Société Linneenne Lyon, Bulletin Mensuel.
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143. Society for British Entomology, Transactions. Bournemouth, Eng.
144. South London Entomological & Nat. Hist. Society, Proc. & Trans.
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146. Systematic Zoology. Washington, D. C.
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My Last New North American Fleas

By C. Andresen Hubbard, Tigard, Oregon

The fleas listed here as new, bring to 50, the number described by the writer and clears from his desk the accumulation of odds and ends through the years. The types are all deposited in the U. S. National Museum, first paratypes in the British Museum.

Thomomys and the **Dactylopsylla**

Investigators realize the almost endless variety found in western pocket gophers. Hall mentions 38 from Nevada, Bailey 15 from Oregon, around 10 are recorded from Washington. Their giant fleas (*Dactylopsylla*) are almost as variable. *D. comis,* the first of these northwest giants to be described, ranges everywhere in the Cascade Mountains and east in Oregon and Washington. West of the Cascades one finds a variable series in which the differences are to be found in the breadth of the VIII St. male, its apical angle, shape of its membranous appendage; and apical outline of VII St. female. The four listed below as new are all between 4 and 5 mm. in length.

Dactylopsylla comis scapoosei new subspecies

Closest to *D. c. comis* but with VIII St. male very narrow, apical angle rounded but very flat and membranous flap approaching the rectangular. VII St. female generally without undulations. Types were taken off *Thomomys d. douglasi* (type host) at Scapoose, Columbia County (type locality), Oregon on May 8, 1951.

Dactylopsylla comis tacomae new subspecies

Like *D.c. comis* but with VIII St. male apically angulate the angle obtuse, the membranous flap large, bulbous in outline. VII St. female without undulations. Types were taken at Tacoma, WASHINGTON (type locality) off Tacoma pocket gopher (type host) on February 26, 1951.

Dactylopsylla comis walkeri new subspecies

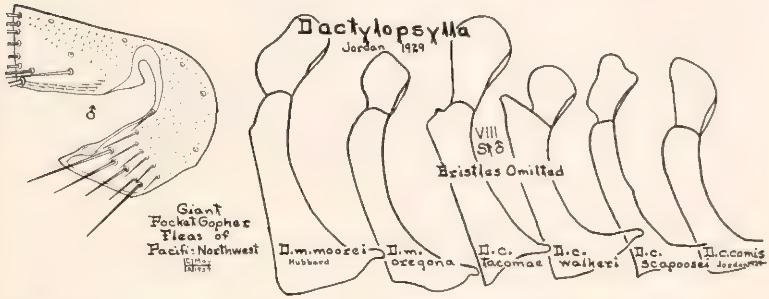
Like *D. c. comis* but VIII St. male with acute apical angle, the membranous flap small and circular in outline. VII St. female with posterior squarish lobe. Types were taken at Wedderburn, Curry County, OREGON (type locality), off *Thomomys m. helleri* (type host) on September 18, 1949. This flea bears the name of Professor Kenneth Walker of Puget Sound College, Tacoma, Washington, long time friend of the writer.

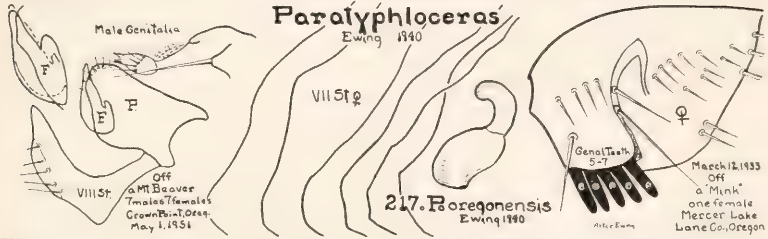
Dactylopsylla moorei oregona new subspecies

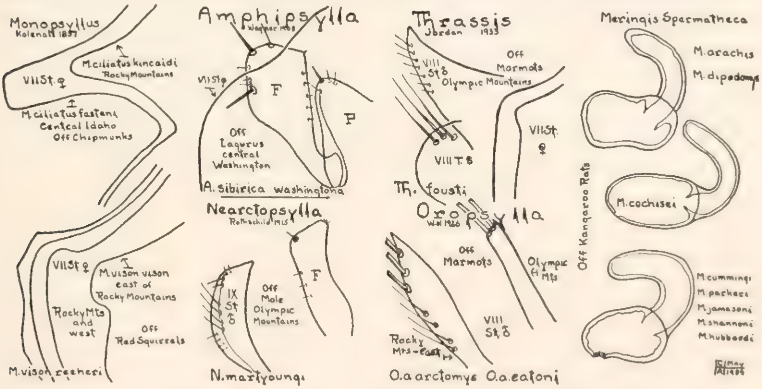
Close to *D. m. moorei* from southwest Washington and separated from the range of the parent by the great Columbia River. Found in the northwest section of Oregon the new subspecies differs from *D. M. moorei* in that VIII St. male is narrower, the apical angle apically rounded flat, with very much smaller membranous flap and somewhat circular in outline rather than rectangular. VII St. female variable, with or without squarish posterior lobe and concave dorsal margin. Types were taken at Devils Lake, Lincoln County, OREGON (type locality) off *Thomomys hesperus* (type host) on September 8, 1949.

Lagurus and **Amphipsylla sibirica**

There appears in February on *Lagurus* at one location in central Washington a small number of fleas close to *A. s. pollionis.* The writer found one male and one female only during 1949, 1950, 1951, sorted out of hundreds of other *Lagurus* fleas from the same locality west of the Columbia River. *Lagurus* taken east of the river did not carry the flea. Since the Washington form is separated from *A. s. pollionis* of Alberta, Canada by two natural barriers, the Columbia River and the Rocky Mountains and since differences between the two have been called to the attention of the writer by Dr. Karl Jordan, he here establishes.







Amphipsylla sibirica washingtona new subspecies

Close to *A.s. pollionis* but with these differences: Male: Frons not so strongly curved in upper part. Spinlets on abdominal terga 3,4,3,1,1. Hind tibia on outer surface with 12 subdorsal lateral bristles, on inner surface an oblique row of 6. VIII St. with a longitudinal row of 5 long bristles. Dorsal margin of finger and especially upper posterior angle more rounded and the two spiniforms nearer together. Apical ventral sclerite is straighter and the bulbous tip is more abruptly curved upwards. Female: Apical margin of VII St. undulate, armed with 5 major, 4 medium and 6 small bristles to the side. Types were taken at 18 miles east of Ellensburg, WASHINGTON (type locality), off *Lagurus curtatus pauperrima* (type host) on February 6, 1951.

The Allotype Male of **Paratyphloceras oregonensis** Ewing

This, the mystery flea of the far West, was described by Ewing in 1940 from a single female taken off a mink at Mercer Lake, Lane County, Oregon on March 12, 1933 by H. H. Stage. The writer suspected the flea to be off *Aplodontia* but over a period of 40 years and hundreds of Mt. Beaver records had never taken it. On May 1, 1951, six *Aplodontia r. rufa* were taken by the writer at Crown Point, Oregon. Five were without fleas but the sixth carried 14 which upon examination proved to be 7 males and 7 females of *P. oregonensis,* the first ever seen by the writer. The pattern of the male genitalia now available; the writer places the genus between *Rectofrontia* and *Actenophthalmus* with the male suggestive of *R. fraterna* and *A. heiseri,* and is described as follows. Process large, well rounded and entire. Finger small in comparison to P., slender, apically rounded to pointed, extending to apex of P. with unusually large articulating surface with P. and armed posteriorly with several small bristles. VIII St. hooked (like regular logging dog), vertical arm with many posterior bristles. Pygidial area similar to *Micropsylla.* Female VII St. entire, high and undulate in outline. Spermatheca similar to *R. fraterna* but with more barrel shaped body. Genal teeth vary from 5 to 7 in this flea and fifth segment of tarsus II with 5 pairs of lateral plantar bristles, fifth segment of tarsus III with 6 pairs. Types bear writer's number 2800.

Olympic Mountains of Washington

For a number of years Dr. Murray Johnson, physician and surgeon of Tacoma, Washington has been the leading naturalist in the Olympic Mountains. From the many fleas sent to the writer by him the following three are now described as new.

Oropsylla arctomys eatoni new subspecies

Close to *O. a. arctomys* Baker but with following differences. Male: Finger narrower, proportions different; acetabular above lowest point of anterior margin of F. and posterior margin of P.; additional bristles present; VIII St. with only 3 major bristles close to apex. Female: VII St. entire, a squarish lobe in outline; spermatheca with body smaller, less rounded, tail longer. Types were taken off *Marmota olympus* (type host) in Olympic National Park, WASHINGTON (type locality) on August 12, 1951. This flea bears the name of Mr. Alden Eaton, late of Seattle, long time friend of the writer and victim of heart disease at 45.

Thrassis fousti new species

In the writer's opinion this flea lies midway between *Th. acamantis* Roths. and *Th. spenceri* Wag. with male genitalia being proportioned between the two, and in the female VII St. being entire and squarish. Types were taken off *Marmota olympus* (type host) in Olympic National Park, WASHINGTON (type locality) on August 12, 1950. This flea bears the name of Mr. Guy E. Foust, late of Sacramento, California, brother-in-law of the writer and victim of heart disease at 50.

Nearctopsylla martyoungi new species

Close to *N. hyrtaci* Roths. but with following differences: Male. Pronotal comb more strongly curved, spines greatest so far found in genus, totaling 39; Pronotal area from comb to base almost as wide subdorsally as the subdorsal spines are long. Bristles on abdominal tergites more numerous; tergum VII sinus extends only half so deep and at its margin there are about a dozen bristles arranged in two irregular rows; Process and finger nearly the same; manubrium not so narrow towards the tip; posterior margin of dilated upper end of vertical arm of XI St. more evenly convex, ventral arm very much broader. The female is unknown. Dr. Karl Jordan has supplied the above differences. The holotype male (only specimen) was taken off *Scapanus townsendi* (type host) on Hurricane Ridge, Olympic National Park, WASHINGTON (type locality) on August 12, 1950. This flea bears the name of Mr. Martin Young, late of Portland, Oregon, cousin of the writer, a Marine flame thrower who in a voluntered mission to burn out a Japanese pill box accomplished the mission on the Island of Guam at the cost of his life.

Western Squirrels and **Monopsyllus**

The writer has before him two fleas of western squirrels which he considers new, the first to be called

Monopsyllus ciliatus fasteni new subspecies

Close to *M. c. kincaidi* Hub. but differing from it and all other ciliatus in that the VII St. female is with a broad rectangular lobe suggestive of the *M. eumolpi* complex. The male is unknown. The types were taken off a chipmunk (type host) 10 miles north of Potlatch, Latah County, IDAHO (type locality) on July 22, 1945 and bear the writer's number 2506. This flea bears the name of Dr. Nathan Fasten, Seattle, Wash., major professor of the writer while at the University of Washington.

Monopsyllus vison reeheri new subspecies

This is the form of *M. vison* found west of the Rocky Mountains. The writer has collected it in Idaho, Washington and Oregon. The constant difference is in the VII St. female which is entire and squarish in apical outline. The types were taken at Hepner, OREGON (type locality) (western limit of type host range) off *Tamiasciurus h. richardsoni* (type host) on June 15, 1950 and bear the writer's number 2760. This flea bears the name of Mr. Max Reeher, federal entomologist at Forest Grove, long time friend of the writer.

A New **Meringis** from the Southwest

The writer has before him specimens of *Meringis arachis* Jord. from all over its range and a small series close to it but differing in the female which shall be called

Meringis cochisei new species

The male of the new species is similar to *M. arachis* but in the female the spermatheca is differently shaped from all described *Meringis,* being elliptical. The types were taken off Hog-nosed Skunk (true host probably *Dipodomys,* the skunk its predator) in Baboquivari Mountains, ARIZONA (type locality) on January 16, 1931. The flea bears the name of the famous Indian Chief Cochise who ranged through the type locality and left his name on many natural objects in Arizona.

Nomenclature Notice

All comments relating to the following proposals should be clearly marked with the file number and should be in the hands of Francis Hemming, Secretary, 28 Park Village East, Regent's Park, London N.W.1, England before November 11, 1954.

Details on the following are in *Bull. Zool. Nomencl.* Part 6, Vol. 9:

immigrans Sturtevant 1921, as in *Drosophila immigrans,* proposed validation of (pp. 161) (File Z. N. (S.) 711).

pruni Geoffroy 1762, as in *Aphis pruni,* proposed validation of (p. 163) (File Z. N. (S.) 428).

Lachnus Burmeister 1835, and **Cinara** Westwood 1835, proposed designation of type species (p. 174) (File Z. N. (S.) 174).

In Part 7 of Vol. 9: **Melanargia** Meigen 1828, proposed validation of (p. 221) (File Z. N. (S.) 708).

In Part 8 of Vol. 9: Geoffroy 1762, *Historie abrégée des insectes qui se trouvent aux environs de Paris,* proposed validation of the following six names published in, for genera: **Stratiomys, Stomoxys, Volucella, Nemotelus, Scatopse, Bibio** (p. 241) (File Z. N. (S.) 710).

Ratios as a Means of Specific Differentiation in Collembola

By KENNETH CHRISTIANSEN, American University of Beirut

It has long been customary to use organ-length ratios as characteristics in separating Collembolan species. In the course of preparation of a forthcoming revision of the Nearctic *Entomobrya,* a large number of measurements were taken, transformed into ratios, and treated statistically.

In all of these ratios the overall size of the individual (less the intersegmental membrane areas) was taken as the denominator and the length of one of twenty-two different organs taken as numerator. These organs were: left antennal segments, head length, thoracic and abdominal segment lengths, manubrium, dens, left femora 1 and 3, left tibiotarsi 1 and 3, left ungues 1 and 3, and left empodial appendages 1 and 3. Following Jeannenot[3] the ratios were considered as following a normal curve distribution and the standard deviation and error was calculated by methods essentially identical with hers. During conversations with Prof. Selim Khamis of the Economics Institute of this University, it was pointed out that this procedure was of dubious validity when dealing with ratios, and for accuracy, a special series of formulae, specifically designed for ratios[4] should be used. Several series of data were recalculated upon this basis and the conclusion was drawn that the changes so produced either strengthened or did not materially affect the ideas exploited below.

It was found that whenever a large number of different organs were measured, a high level of significant and very significant differences were present between most species. In an attempt to better understand these results, a series of populations of *Entomobrya nivalis* and *Entomobryoides purpurascens* were measured and treated statistically. It was found that the levels of difference between many of these populations were indistinguishable from those between most species. Of the cases where the differences between species were clearly distinguishable from those between populations, all, save one, dealt with forms so widely separated taxonomically that the ratio differences were of no real value.

A further point illuminated in this study was the relationships between the common pattern forms of *E. nivalis,* i.e., pattern A—usually called typical *E. nivalis* and pattern B—usually called *E. multifasciata.* The various populations were so divided that each population consisted solely of pattern A or pattern B. There was no correlation between the ratios and the type of pattern. The frequency of significant and very significant ratio differences between populations of *E. nivalis* was as follows: between A and B, very significant differences—7, significant differences—9; between A and A or B and B, very significant differences—7, significant differences—10.

CONCLUSION

The evidence, described above, indicates that the difference among organ-body ratios between some populations of Collembola are of such a high level as to be difficult to distinguish from those between species. This fact combined with the great changes in such ratios during growth, already exploited by Agrell [1] and Denis and Jeannenot,[2] make the utilization of such ratios as specific characters a doubtful taxonomic procedure. It can be argued that these cases are peculiar to the genera studied, but until a sufficient number of studies are available upon other groups, we have no basis for such an assumption.

It can also be argued that a sufficiently wide selection of specimens from different populations would also overcome these difficulties; but, this has not been customary in the past, and because of the rarity of collections, it is not possible for the huge majority of species.

LITERATURE CITED

1. AGRELL, I. 1948. Arkiv för Zoologi, Stockholm, 41 (12): 1–35.
2. DENIS, J. R., and JEANNENOT, F. 1951. Supplement Bull. Scientifique de Burgogne, No. 12: 1–20.
3. JEANNENOT, F. 1952. Trav. Lab. Zoologie & Station Aquicole Grimaldi, Dijon, No. 1: 1–51.
4. HANSEN, M. H., HURWITZ, and MADOW. Sample Survey Methods & Theory. New York, 1953. 1: 165.

The Insect Fauna of an Iraq Oasis, The City of Baghdad

By Neal A. Weber, Swarthmore College, Swarthmore, Pa.

Baghdad, largest city in Iraq and existing on its present site on the Tigris River for some 1200 years, is situated centrally in the great palaearctic desert belt and is in effect a large oasis. The ancient and extensive irrigation which makes human life possible on the hot, level plains here has also permitted the presence of a far greater variety of plant and animal life than would otherwise be found. The date palm, so important in the economy of the country, forms large groves in peripheral areas and smaller groves or scattered trees occur throughout the sprawling city. Eucalyptus and citrus trees are planted extensively and Oleander (Apocynaceae-*Nerium oleander*) is the common hedge. Many people have rose gardens rivalling in beauty any to be found elsewhere; and it is a local custom to have well-kept and constantly irrigated gardens in which the hot evenings are spent. The mild winter climate with snow unknown and frosts uncommon permits bananas to survive occasionally in sheltered gardens.

The annual rainfall averages 134 mm. (five inches), nearly all falling in the five cool months (November-March); the remainder of the year is virtually rainless, with usual maximum temperatures over 37.8° C. (100° F.). Temperatures of 45° C. (113° F.) are common, with 43.3° C. (110° F.) the mean normal daily maximum in August when the dates ripen.

Various observers, mostly British, have recorded many species of Baghdad insects but have confined themselves mostly to their specialties and considerable gaps occur in the records of various orders due to the absence of collectors in them. The present brief survey attempts to give a general picture of the insect fauna and contains unpublished records which contribute to a filling-in of the gaps. No effort has been made to cover all of the orders. Several non-insect but related arthropods are included as an aid to picturing the fauna. Personal records are from September 1950 through August 1952.

Class CRUSTACEA—Order **Isopoda**

Pale sowbugs or woodlice live in the leafy trash of irrigations or under objects lying on the soil where some moisture is present. *Porcellio* and *Porcellionides* have been recorded.[1]

Class ARACHNOIDEA—Order **Scorpionida**

Scorpions are common; some are considered dangerous. *Buthus, Hemiscorpius* and *Orthochirus* are recorded.[2, 3]

Order **Solpugida**

These strange spider-like arachnoids with "mandibles" or chelicerae operating vertically as in vertebrates may occur about lights in the evening in their search for insects but are not commonly seen. *Galeodes arabs* Koch may be the species.

Order **Araneae**

Spiders, which forage freely over the Arctic tundra and in dense high mountain forests, are equally adaptable to desert conditions though generally paler in color. White spiders were taken on Oleander and a more ordinary-colored one ran over soil, June 22, which had a surface temperature of 54° C. (129.2° F.) at the time (3:20 p.m.). Only ants and mantids could tolerate this temperature here.

Order **Acarina**

Mites are not as conspicuous elements of the soil litter as in other areas, such as Arctic tundra. They were taken as nymphs and adults on the common bat, *Pipistrellus kuhli* Kuhl, as were adult ticks (*Argas fischeri*) (det. Hoogstraal). The common dog tick, *Rhipicephalus sanguineus* (Latr.) (det. Bequaert), was taken from man, dogs and the common hedgehog (*Hemiechinus calligoni*).

Class CHILOPODA

No large centipedes have been noted. *Scolopendrella* and *Scutigera* types of small to medium size occur.

Class INSECTA

Collembola

Collembola occur in the soil litter of irrigations but are not numerous. Dry soil litter under trees may produce a few of small size.

Thysanura

Houses for the most part appear to become too hot for Thysanura, which are also not common elsewhere. By far the commonest type noticed is small, ovate and dark with the body produced as a shield over the legs, and living in ant nests (*Messor barbarus semirufa* André and *Cataglyphis bicolor orientalis* Emery).

Diplura

A *Japyx*-like species occurred in the nests of the above *Cataglyphis.*

Odonata

Odonata are generally scarce and appear to be confined largely to the vicinity of abandoned irrigation canals containing stagnant water. Large dragon flies may occasionally be seen hawking over the gardens and were seen to take winged ants (*Camponotus thoracicus xerxes* Forel) from an evening marriage flight.

Orthoptera

Orthoptera probably is the most important order of insects here. Baghdad, like other oases in the Middle East, has a large and varied fauna. The major groups are:

Blattaria: Blattidae. Three roaches are common in the houses, *Periplaneta americana* L., *Blatta orientalis* L. and *Polyphaga aegyptiaca* L.

Mantodea: Manteidae. The mantid, *Mantis religiosa* L., is a large species in gardens but the most striking in adaptation to a desert life is the genus *Eremiaphila.* The species are short, flattened dorso-ventrally, and run actively on long legs after their prey. The legs also permit them to keep the body above the hot ground. One was seen June 22 running in a light breeze at 3:20 p.m. over soil at a surface temperature of 54° C. (129.2° F.).

Saltatoria: Acrididae. Among the locust genera are *Anacridium, Platypterna, Ochrilidia, Schistocerca* and *Tropidopola. A. aegyptium* L. resembles the migratory locust (*S. gregaria* F.) but is larger and has a generally more even color and smaller spots. Both occur sporadically in the gardens. *Sphingonotus* (*savignyi* Sauss., *satrapes* Sauss. and *carinatus* Kr.) are adapted to extreme desert conditions but occur in the city.

Saltatoria: Tettigoniidae. The katydid, *Tettigonia viridissima* L., and *Decticus albifrons* L. may range over the desert as well as the local gardens.

Saltatoria: Gryllidae. The crickets, *Gryllus burdigalensis* Latr., *desertus* Pall. and *domesticus* L., are common in gardens and *burdigalensis,* or near, may be a minor pest in houses, eating holes in fabrics. *Gryllodes sigillatus* (Walker) is a house pest for the same reason and was also captured while eating a hole in the abdomen of a common live beetle, *Oenera hispida* Forsk.

Saltatoria: Gryllotalpidae. The mole cricket, *Gryllotalpa gryllotalpa* (L.) and much smaller species frequent gardens and may come to lights.

Chopard and Uvarov,[4] and the latter subsequently, have contributed much to a knowledge of this orthopteran fauna. Rehn [5] has identified many of the present collection.

Isoptera

Dr. A. E. Emerson has kindly determined the following new records of termites, which have seldom been noted in the Middle East:

Amitermitinae: *Amitermes vilis* (Hagan). The species was described nearly a century ago from alates from Iran, and the present collection offered the first opportunity to correlate the soldiers and workers with them. All castes of termites were emerging from one site April 23, 1952 at 8:30 a.m. following a heavy electric storm and shower during the night. The silty soil was left muddy and there was some standing water. They were emerging from bare holes no larger than necessary for their passage on top of a ridge bordering an irrigation canal. The few soldiers and many nymphs were milling about the exits while the alates were hurrying out and fluttering off into the bright sunshine. As I passed through the city, more alates were noted flying at Sharjah and the Colleges of Engineering and Arts and Science shortly after 9:00 a.m. It was evident that conditions were appropriate for a general emergence. The common sparrows (*Passer domesticus biblicus*) were flying up and capturing them with difficulty. Where the termites were flying in the middle of the city, very few plants were available to them for woody food and they were doubtless emerging from wood beams of the predominately brick and tile buildings. This insect is, therefore, one of the most directly harmful of Baghdad species.

Amitermitinae: *Microcerotermes diversus* Silvestri. Termites in a date palm grove containing an understory of orange trees, and alates falling in a pool May 11, 1952.

Additional species taken elsewhere in Iraq which probably will be found in Baghdad are *Anacanthotermes vagans* (Hagan) from Basra, *Reticulitermes,* probably *lucifugus* (Rossi), from the Zubair desert and a new species of *Microcerotermes* from the desert near Baghdad.

(*To be continued*)

Entomological Departments

Believing such material to be of interest to its readers, ENTOMOLOGICAL NEWS herewith solicits articles similar to the one here presented and giving information on the organization and activities of entomologists in colleges, universities, museums, and in governmental and other groups.

University of Kansas

The Department of Entomology at the University of Kansas in Lawrence is one of very few separate entomological departments not a part of an agricultural school. It has, therefore, a nearly unique opportunity to emphasize non-agricultural aspects of entomology (although two courses in agricultural entomology and one in insect toxicology provide general training in these fields).

A considerable group of graduate students is currently enrolled, including individuals specializing in each of the principal entomological fields. Staff members are as follows: Raymond H. Beamer (Professor and Curator of Snow Entomological Museum), Robert E. Beer (Assistant Professor), Kathleen C. Doering (Associate Professor), H. B. Hungerford (Professor), Charles D. Michener (Professor and Chairman of Department), and Robert R. Sokal (Assistant Professor).

Systematics is perhaps the field for which the Department is best known. Systematic research has been facilitated by the presence of the Snow Entomological Museum in the same building (Snow Hall) which is occupied by entomology and certain other biological departments. This Museum is financially a unit separate from the Department but because of shared personnel and close physical association it has remained philosophically close to the Department. Because of the interests of newer staff members, the collections of mites and of bees have grown particularly in recent years. The museum is, however, especially famous for its large collections of Homoptera and aquatic Hemiptera, assembled primarily through the efforts of Dr. Beamer and Dr. Hungerford. The availability of the Kansas Science Bulletin as a place of publication for the large works which so often result from systematic research has had an important influence on the growth of this type of research at the University of Kansas.

The systematic fields currently or recently investigated by staff members are as follows: aquatic Hemiptera (Hungerford); Cicadellidae and delphacine Fulgoridae (Beamer); Fulgoridae and Cercopidae (Doering); Apoidea or bees, saturniid moths, and chigger mites (Michener); Acarina or mites (Beer). Because of difficulties in their study a course on mites is offered by Dr. Beer and intensive work on these arthropods is being carried on.

Two staff members (Michener, Sokal) are particularly interested in problems and mechanisms of evolution; Michener's principal concern in this connection has to do with systematics in relation to evolution while Sokal's is in connection with ecology in relation to evolution, using biometry as one of the tools. Special course work provided to further understanding of evolutionary problems includes Speciation and Population Genetics, both offered in cooperation with Dr. J. A. Weir, a geneticist in the Department of Zoology, and Biometry, offered by Dr. Sokal.

The fields related to morphology receive special emphasis in course work, separate courses being given (by Doering) in external morphology, internal morphology, and insect histology. A course in insect physiology is also given.

Insect behavior and ecology receive considerable attention. Groups on which such work is going on or has been completed in recent years include sawflies and mites (Beer), aquatic hemiptera (Hungerford), and bees (Michener). Studies of the origin and development of social behavior in bees are receiving special attention from Dr. Michener and a group of graduate assistants. Much of the work being carried on by Dr. Sokal and his assistants on the origin, development, and genetics of DDT resistance in *Drosophila* and the housefly is behavioral in nature.

A University owned natural history reservation along the wooded bluffs of the Kaw River valley eight miles from Lawrence provides excellent opportunities for field ecological studies. A prairie area on the reservation and others near Lawrence are available for study although the region in general is hilly and wooded where not cultivated. Recent investigations by graduate students making use of the reservation include studies of the biology and ecology of chiggers, of the ecology of centipedes and millipedes, and of the arthropod ecology of mammalian nests. A resident ecologist (Dr. Henry S. Fitch) on the natural history reservation provides help on all such studies.

The applied field of entomology that receives principal attention at the University of Kansas is Medical Entomology. Because of close working relationships with the Department of Bacteriology it is possible for graduate students to undertake transmission problems requiring extensive bacteriological work. Tularemia in particular has been the subject of several such studies. Problems in the biology and systematics of medically important arthropods are also encouraged; for example, there has been a long series of studies of chiggers conducted in this Department.

Other entomological offices on the University campus are those of the Entomologist of the Kansas State Board of Health (Richard Lyness) and of the State Entomologist, Southern Division of Kansas (Michener). The field work in connection with the State Entomologist's office is carried on by L. A. Calkins throughout the year and by Dr. Beer and others in summer.—C. D. MICHENER.

Current Entomological Literature

Compiled by **VENIA T. PHILLIPS**, Librarian

Academy of Natural Sciences of Philadelphia

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania pertaining to entomology, including all arthropods except Crustacea. Coverage will be world-wide as regards major contributions to systematics as well as for all papers on morphology, physiology, embryology, etc. In addition, for species from the Americas and the Pacific (Nearctic, Neotropical and Polynesian regions) all minor contributions to taxonomy, distribution, etc., will also be recorded.

This list gives references of the year 1954 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

GENERAL—Bigelow, R. S. & C. Reimer—An application of the linear discriminant function to insect taxonomy. [43] 86: 69–72. **Brues, C. T., A. L. Melander & F. M. Carpenter**—Classification of insects: keys to the living and extinct families of insects, and to the living families of other terrestrial arthropods. [68] 108, 917 pp., ill. (k). **Doss, M. A. & J. M. Humphrey**—Index catalogue of medical and veterinary zoology. Suppl. 1. Authors A to B. Bureau of Animal Industry, pp. 1–317. Supt. of Documents, Washington, D. C., $1.00. **Grandi, G.**—"Introduzione allo studio dell'entomologia," Aggiunte e correzioni (successive alla pubblicazione dell'opera). [Boll. Ist. Ent. Univ. Bologna] 19: 263–306, 1952/53. **Hemming, F.**—Zoological nomenclature: Decisions taken by the Fourteenth International Congress of Zoology, Copenhagen, August 1953. [Science] 119: 131–33. **MacNay, C. G.**—New records of insects in Canada in 1952: a review. [43] 86: 55–60. **Swan, L. W.**—The ecology of arthropods associated with Photinis arbutifolia. [Stanford Univ. Abs. of Theses, 1951–52] 27: 153–55. **Voûte, A. D.**—Oecologische en chemische bestrijding van insectenplagen. [57] 15: 82–6.

BIOGRAPHIES, OBITUARIES—Barber, Marshall A., 1868–1953.—Obituary notice and short biography. [Revista Ecuat. Ent. Parasit.] 1, no. 4, 128–30, 1953. **Fattig, Perry Wilbur**, 1881–1953.—Obituary. [64] 37: 34. **Leefmans, Salomon**, 1884–1954.—Herinneringsnummer Dr. S. Leefmans. (Biographical with port.) [57] 15: 65–76. **Nowell, Wesley Raymond**, 1924– .—Short biography in

[Stanford Univ., Abs. Theses, 1951–52] *27*: 149. **Swan, Lawrence Wesley,** 1922– .—Short biography. [Stanford Univ., Abs. Theses, 1951–52] *27*: 155.

ANATOMY, PHYSIOLOGY, MEDICAL—Åkesson, B. —Observations on the haemocytes during the metamorphosis of Calliphora erythrocephala (Meig.). [25] 6: 203–11, ill. **Aschoff, J.**—Zeitgeber der tierischen tagesperiodik. [100] 41: 49–56. **Bennett, J.**—Comparative genetics of Drosophila tripunctata Loew. [15] 88: 57–61. **Bielanska-Osuchowska, Z.**—Early stages of embryonic development of the weevil Polydrosus mollis Ström. (Curculionidae). [Bull. Int. Acad. Polonaise Sci. Lettres, Cl. Sci. Math. et Nat., Sér. B: Sci. Nat. (II)] 1951: 497–509, ill., 1952. **Bier, K.**—Über den saisondimorphismus der oogenese von Formica rufa rufo-pratensis minor Gössw. und dessen bedeutung für die kastende termination. [Biol. Zentralbl.] 73: 170–90. **Bigelow, R. S. & E. J. LeRoux**—Distinct morphological differences between DDT-resistant and non-DDT-resistant strains of the house fly, Musca domestica L. [43] 86: 78–86, ill. **Bird, F. T. & M. M. Whalen**—A nuclear and a cytoplasmic polyhedral virus disease of the spruce budworm. [44] 32: 82–6, ill. **Birukow, G.**—Menotaxis im polarisierten licht bei Geotrupes silvaticus Panz. [100] 40: 611–12, 1953. **Bliss, D. E., J. B. Durand & J. H. Welsh**—Neurosecretory systems in decapod crustacea. [Z. f. Zellforsch.] 39: 520–36. **Boyes, J. W.**—Somatic chromosomes of higher Diptera. III. Interspecific and intraspecific variation in the genus Hylemya. [44] 32: 39–63, ill. **Buchner, R.**—Beeinflussung der grösse der arbeitsbiene durch raum- und nahrungsmangel während der larvenzeit. [Roux' Archiv] 146: 544–79, 1953. **Butler, C. G.**—The method and importance of the recognition by a colony of honeybees (A. mellifera) of the presence of its queen. [126] 105: 11–29, ill. **Chatterjee, A. K. & R. D. Mitra**—Experiments on the induced resistance to benzene hexachloride in the house fly, Musca nebulo F. [Z. Tropenmed.] 5: 113–15. **Cooper, K. W.**—Egg gigantism, oviposition, and genital anatomy: their bearing on the biology and phylogenetic position of Orusses (Siricoidea). [Proc. Roch. Acad. Sci.] 10: 39–68, ill., 1953. **Cuellar, A. R.**—El ultrasonido en la vida de los insectos. [Graellsia] 9: 137–47, ill., 1951. **Ellenby, C.**—Oxygen consumption and cell size. A comparison of the rate of O_2 consumption of diploid and triploid prepupae of Drosophila melanogaster M. [77] 30: 475–91.

1953. **Goetsch, W.**—Wilkürliche erzeugung von ameisen "soldaten." [100] 41: 124. **Grabowski, C. T. & V. G. Dethier**—The structure of the tarsal chemoreceptors of the blowfly Phormia regina. [79] 94: 1–20. **Hall, I. M.**—Studies of microorganisms pathogenic to the sod webworm (Crambus sp.). [70] 22 (15): 535–65. **Harker, J. E.**—The diurnal rhythm of activity of mayfly nymphs. [77] 30: 525–33, 1953. **Harnisch, O.**—Wasserhaushalt und ökologie der chironomidenlarven. [100] 41: 123–24. **Herskowitz, I. H.**—The mutagenicity of formaldehyde in different early developmental stages of D. melanogaster males. [15] 88: 45–9. **Hirschler, J.**—Die organization des männlichen geschlechtszellenverbandes von Macrothylacia rubi (L.) (Lepid.). [157] 73: 229–75, 1953. **Hughes, K. M.**—The development of an insect virus within cells of its host. [70] 22 (12): 391–406. **Immel, V.**—Zur physiologie des chemischen sinnes von Nemastoma quadripunctatum (Opiliones, Dyspnoi). [100] 40: 609–10, 1953. **Jones, J. C.**—The heart and associated tissues of Anopheles quadrimaculatus Say (Dipt., Culicidae). [79] 94: 71–124. **Lalonde, D. I. V. & A. W. A. Brown**—The effect of insecticides on the action potentials of insect nerve. [44] 32: 74–81, ill. **Langenbuch, R.**—Zur frage der ursache für die resistenz von insekten gegenüber lipoidlöslichen insektiziden. [100] 41: 70. **Leví-Castillo, R.**—Aparición de una resistencia a los insecticidas de acción remanente en Culex pipiens quinquefasciatus de la cuidad de Guayaquil. [Revista Ecuat. Ent. y Paras.] 1, no. 4, 7–16, 1953. **Lewis, S. E. & E. C. Slater**—Oxidative phosphorylation in insect sarcosomes. [Biochem. Jour.] 55 (5): Proc. Bioch. Soc., xxvii. The effect of dinitrophenol on insect sarcosomes. *Ibid.*, xxvii, 1953. **Lüers, T., H. Köpf & H. Lüers**—Uber nervenzellenveränderungen bei Drosophila nach DDT-vergiftung. [Biol. Zentralbl.] 73: 203–212. **Magnus, D.**—Uber optische "schlüsselreize" beim paarungsverhalten des kaisermantels Argynnis paphia L. (Lep., Nymph.). [100] 40: 610–11, 1953. **Mariani, M.**—Comportamento di mosche DDT-sensibile e DDT-resistenti di fronte al Malathon. [Boll. Soc. Ital. Biol. Sperim.] 29: 1774–76, 1953. **Meyer, J.**—Sur l'accumulation et l'origine de lipides dans certains tissus nourriciers de galles. [2] 238: 1066–69. **Mikulska, I.**—The chromosomes of the parthenogenetic and thelytokian weevil Eusomus ovulum Germ. (Curculionidae). [Bull. Int. Acad. Polonaise Sci. Lettres, Cl. Sci. Math. et Nat., Sér. B: Sci.

Nat. (II)] 1951: 293–307, ill., 1952. **Miles, M.**—Field studies on the influence of weather conditions on egg-laying by the cabbage root fly, Erioischia brassicae. [20] 40: 717–25, 1953. **Mooser, H. & F. Weyer**—Künstliche infektion von laüsen mit Borrelia duttoni. [Z. Tropenmed.] 5: 28–45. **Muir, D. A.**—Ants Myrmica rubra L. and M. scabrinodis Nylander as intermediate hosts of a cestode. [98] 173: 688–89, ill. **Myers, C. M. & J. N. Smith**—Comparative detoxication. 2. Glucoside formation from phenols in locusts. [Biochem. Jour.] 56: 498–503. **Newcomer, W. S.**—The occurrence of B-glucosidase in digestive juice of the cockroach, Periplaneta americana L. [75] 43: 79–86. **Nolte, D. J.**—The eye-pigmentary system of Drosophila. IV, V. [J. Genetics] 52: 111–26, 127–39. **Novitski, E. & G. Braver**—An analysis of crossing over within a heterozygous inversion in Drosophila melanogaster. [Genetics] 39: 197–209, ill. **Palm, N.-B.**—The elimination of injected vital dyes from the blood in myriapods. [25] 6: 219–46, ill. **Passonneau, J. V. & C. M. Williams**—The moulting fluid of the cecropia silkworm. [77] 30: 545–66, 1953. **Pohley, H. J.**—Untersuchungen über differentielle zellteilungen und somatische mutationen am schuppenkleid der mehlmotte Ephestia kühniella Z. [Biolog. Zbl.] 72: 577–98, 1953. **Puchta, O.**—Experimentelle untersuchungen über die symbiose der kleiderlaus Pediculus vestimenti Burm. [100] 41: 71–72. **Ratzenhofer, M.**—Studien über die gewichtsveränderungen bei der entwicklung des grossen kohlweisslings. [Oester. Akad. Wissen, Wien. Math.-Nat. Kl., Sitzungsberichte, Abt. 1] 162: 105–18, 1953. **Rothenbuhler, W. C., J. W. Gowen & O. W. Park**—Allelic and linkage relationships of five mutant genes in honey bees. [J. Heredity] 44: 251–53, 1953. **Sakaguchi, B.**—Genetical and biochemical studies in the Eri-silkworm. [Nat. Inst. Genetics (Japan), Ann. Rept.] 3: 32–34, 1953. **Smith, J. M. & S. M.**—Genetics and cytology of Drosophila subobscura. VIII. Heterozygosity, viability, and rate of development. [J. Genetics] 52: 152–64. **Snodgrass, R. E.**—Insect metamorphosis. [131] 122, no. 9, 124 pp., ill. **Sobels, F. H. & L. E. Nijenhuis**—An investigation into the metamorphosis of the mutant lethal-translucida of Drosophila melanogaster. [Z. induk. Vererbungslehre] 85: 579–92, 1953. **Spurway, H. & J. B. S. Haldane**—Genetics and cytology of Drosophila subobscura. IX. An autosomal recessive mutant transforming homogametic zygotes into intersexes. [J. Genetics] 52: 208–25. **Stellwag-Kittler, F.**—Zur physiologie der käferhäutung. Untersuchungen am mehlkäfer

Tenebrio molitor L. [Biol. Zentralbl.] 73 :12–49. **Tanaka, Y.**—Is there any cytoplasmic effect on unstable genes in silkworms? [Nat. Inst. Gen. (Japan), Ann. Rpt.] 3 (1952): 17–19. Spontaneous recurrent mutations of a modifier of multistar marking. *Ibid.* 19–20, 1953. **Telfer, W. H.**—Immunological studies of insect metamorphosis. II. The role of a sex-limited blood protein in egg formation by the cecropia silkworm. [J. Gen. Physiol.] 37: 539–58. **Tsujita, M.**—Studies on the semi allelic E-series in the silkworm. [Nat. Inst. Genetics (Japan), Ann. Rpt.] 3: 20–24, 1953. Maternal inheritance of "lethal yellow." *Ibid.* 24–27. Trisomic silkworm produced by treatment with B H C powder. *Ibid.* 28–32. **& B. Sakaguchi**—Genetical and biochemical studies of yellow lethal larvae. *Ibid.* 27–28. **Wharton, D. R. A., G. Lorenz & M. L. Wharton**—The odorous attractant of the American cockroach, Periplaneta americana (L.). I. Quantitative aspects of the response to the attractant. [J. Gen. Physiol.] 37: 461–69. II. A bioassay method for the attractant. *Ibid.* 539–58. **Wintringham, F. P. W., P. M. Loveday & G. C. Hellyer**—Phosphorus metabolism in the housefly, Musca domestica. [Biochem. Jour.] 55 (5): P. Biochem. Soc. xxxiii–iv, 1953. **Yosida, T. H.**—Cytology of some insects. 1. Cytological studies on the racial hybrids of Philosamia cynthia (Lep., Satur.). [Nat. Inst. Gen. (Japan), Ann. Rpt.] 3: 34–35. Pt. 2. Multiple sex-chromosome mechanism in Rhaphidopalpa femoralis (Col., Chrysom.). *Ibid.* 35, 1953.

ARACHNIDA AND MYRIOPODA—Causey, N. B.—New Mexican and Venezuelan millipeds in the collection of the Illinois State Natural History Survey. [31] 67: 55–68, ill. **Chickering, A. M.**—The spider genus Mangora (Argiopidae) in Panama. [68] 111: 195–215, ill. (*k). **Gonzales T., L.**—Latrodectus mactans mexicanus subsp. nov. [88] 24: 455–57, ill., 1953. **Grandjean, F.**—Observations sur les oribates (27ᵉ série). [Bull. Mus. Nat. d'Hist. Nat. 2d ser.] 25: 469–76, ill., 1953. **Hammer, M.**—Oribatidae. (See Smaller orders.) **Hoffman, R. L.**—An introduction to the study of the millipeds of Jamaica. [Nat. hist. notes, Nat. Hist. Soc. of Jamaica] 64: 57–59. **Immel, V.**—(See Anatomy.) **Lundblad, O.**—Die hydracarinenfauna von Colombia. [25] 5: 435–586, ill. (k). **Palm, N.-B.**—(See Anatomy.) **Stout, V. M.**—Eylais waikawae n. sp. (Hydracarina) and some features of its life history and anatomy. [Trans. Roy. Soc. N. Z.] 81: 389–416, ill., 1953. —New species of Hydracarina. With a description of the life-history of two. [Trans. Roy. Soc. N. Z.] 81: 417–66, ill., 1953. **Wiehle, H.**—Spinnentiere oder Arachnoidea (Araneae) IX: Orthognatha, Cribellatae, Haplogynae, Entelegynae (Pholcidae, Zodariidae, Oxyopidae, Mimetidae, Nesticidae). [Die Tierwelt Deutschlands] Teil 42, 150 pp., ill., 1953.

SMALLER ORDERS—Carriker, M. A., Jr.—Studies in neotropical Mallophaga. XII. Part 2. Lice of the tinamous. [117] 13: 325–46, 1953. **Cumming, R. B.**—Notes on the genus Metaleptobasis with the description of a new species from Panama (Odonata: Coenagriidae). [64] 37: 23–32, ill. **Demoulin, G.**—Additions et rectifications aux "Ephéméroptères" du "Traité de Zoologie" publié sous la direction de P.-P. Grassé. [136] 89: 264–68, 1953. **Dixon, W. B.**—Book lice or psocids. [Nat. Hist. Notes, Nat. Hist. Soc. Jamaica] 64: 60, ill. **Eichler, W.**—Die entwicklung der vorderen saumborste bei Anaticola-arten als peitschenborste und zum fühleranalogen tastsinnesorgan (Mallopgaga). [160] 152: 32–35. **Hammer, M.**—Collemboles and oribatids from the Thule district (North West Greenland) and Ellesmere Island (Canada) collected by J. C. Troelsen and Chr. Vibe. [Medd. om Grønland] 136, no. 5, 16 pp., ill., 1953. **Hood, J. D.**—Brasilian Thysanoptera. IV. [31] 67: 17–54 (*). **Jordan, H. E. K.**—On a very remarkable flea from Argentina collected by Dr. J. M. de la Barrera. [35] 3: 179–86, ill., 1953 (*). **Puchta, O.**—Anoplura. (See Anatomy.) **Sakimura, K.**—A new Scolothrips from Hawaii. [69] 15: 357–59. **Smit, F. G. A. M.**—Descriptions of new and little-known Siphonaptera. [35] 3: 187–219, ill., 1953 (*). **Stannard, L. J., Jr.**—Illinothrips rossi, new genus and species (Thysanoptera: Phlaeothripidae). [71] 46: 193–6, ill., 1953. —Tropothrips in North America (Thysanoptera; Phlaeothripidae). [31] 67: 81–4, ill. (*). **Whitehead, W. E.**—Avian Mallophaga from Quebec. [43] 86: 65–8.

ORTHOPTERA—Evans, W. L.—Cytology of the grasshopper genus Circotettix. [15] 88: 21–32, ill. **Harker, J. E.**—Diurnal rhythms in Periplaneta americana L. [98] 173: 689–90. **Liebermann, J.**—El alotipo hembra de Trybliophorus modestus Bruner (Acrid., Trybliophorini) con la descripcion de un organo desconocido en su septimo esternito abdominal. [132] 156: 34–49, ill., 1953. **Roonwal, M. L.**—Food-preference experiments on the desert locust, Schistocerca gregaria (Forskal), in its permanent breeding grounds in Mekran (southern Baluchistan). [J. Zool. Soc. India] 5: 44–58, ill., 1953. **Wharton et al**—See Anatomy.)

HEMIPTERA—Barth, R.—Die fangdrüsen an den beinen von Zelus (Diplocodus) leucogrammus (Perty). [157] 73: 325–36, 1953. **Beirne, B. P.**—The Prunus- and Rubus-feeding species of Macropsis (Cicadellidae). [43] 86: 86–90, ill. (k). **Bradley, R. H. E.**—Studies of the mechanism of transmission of potato virus Y by the green peach aphid, Myzus persicae (Sulz.) (Aphidae). [44] 32: 64–73. **Carvalho, J. C. M.**—Neotropical Miridae, LXVIII: Genus Eurychilella Reuter with descriptions of four new species. [117] 13: 347–53, 1953. **Drake, C. J.**—A miscellany of new Tingidae. [31] 67: 1–16 (*). **Hottes, F. C.**—Descriptions of some undescribed forms of Lachini (Aphidae). [31] 67: 89–92. **Hussey, R. F.**—Concerning the Floridian species of Fulvius (Miridae). [64] 37: 19–22 (k). **Immel, R.**—Biologische beobachtungen an der staubwanze (Reduvius personatus L.). [160] 152: 96–98. **Kloft, W.**—Phototaktisches verhalten und wintereireife bei Cinara laricis Walk. (Aphidina, Cinarini). [100] 40: 612, 1953. **Lent, H.**—Nova especie de Triatoma da Regiao Oriental (Hem., Reduv.). [117] 13: 315–19 (k), 1953. **León, L. A.**—Trasmisores naturales y experimentales del Trypanosoma cruzi en el Ecuador (Triatomidae & others). [Revista Ecuat. Ent. y Parasit.] 1, no. 4, 45–62, ill., 1953. **Ross, H. H.**—Polyphyletic origin of the leafhopper fauna of Ilex decidua. [71] 46: 186–92, ill., 1953. **Wygodzinsky, P.**—Contribuição ao conhecimento dos gêneros Heniartes Spinola, 1837 e Agriocleptes Stal, 1866 (Reduviid.). [117] 13: 369–80, 1953.

LEPIDOPTERA—Amsel, H. G.—Die microlepidopteren der Brandt'schen Iran-Ausbeute. 4. Teil. [25] 6: 255–326, ill. **Bird & Whalen**—(See Anatomy.) **Brown, F. M.**—The papilios of Ecuador—Genus Papilio Linn. (Rhopalocera). [Revista Ecuat. Ent. Parasit.] 1, no. 4, 95–112, ill., 1953 (k). **Hall, I. M.**—(See Anatomy.) **Kiriakoff, S. G.**—Recherches sur les organes tympaniques des lépidoptères, en rapport avec la classification. [136] 89: 258–63, ill., 1953. **Lambremont, E. N.**—The butterflies and skippers of Louisiana. [Tulane Stud. Zool.] 1: 127–64. **Magnus, D.**—(See Anatomy.) **Oiticica, J., Filho**—Dirphia dalcyra, nova espécie (Hemileucidae). [117] 13: 381–88, 1953. **Passonneau & Williams**—(See Anatomy.) **Pohley, H. J.**—(See Anatomy.) **Principi, M. M.**—Sviluppo postembrionale ed etologia della "Lithicolletis platani" Stgr. (Gracilariidae). [Boll. Ist. Ent. Univ. Bologna] 19: 171–250, ill., 1952/53. **Stempffer, H. & N. H. Bennett**—A revision of the genus

Teriomima Kirby (Lycaenidae). [35] 3: 77–104, ill., 1953 (*). **Stultz, H. T.**—Tortricidae. (See Hymenoptera.) **Tanaka, Y.**—(See Anatomy.) **Tsujita, M.**—(See Anatomy.) **Vazquez, G., L.**—Observaciones sobre pieridos mexicanos, con descripcion de algunas formas nuevas. [88] 24: 435–44, 1953. **Yosida, T. H.**—(See Anatomy.)

DIPTERA—Adachi, M. S.—Preliminary studies in Hawaiian Dolichopodidae. Part II. The genus Emperoptera Grimshaw. [69] 15: 293–96, ill. (k). **Åkesson, B.**—(See Anatomy.) **Alexander, C. P.**—Notes on the Tipulidae of Ecuador. Part IV. [Revista Ecuat. Ent. Parasit.] 1, no. 4, 77–93, ill., 1953 (*k). —An undescribed crane-fly from the Hawaiian Islands (Tipulidae). [69] 15: 297–98. **Biagi F., F.**—Sobre la correcta ortografia del nombre generico Flebotomus (Psychodidae). [88] 24: 451–53, 1953. — & **A. M. de B. de Biagi**—Datos ecologicos de algunos flebotomus mexicanos (Psychodidae). [88] 24: 445–50, 1953. **Bigelow & LeRoux**—(See Anatomy.) **Brennan, J. M. & G. A. Mail**—A technic for shipping live mosquitoes with particular reference to Culex tarsalis. [Science] 119: 443. **Burla, H. & C. Pavan**—The Calloptera group of species (Drosophila, Diptera). [117] 13: 291–314, 1953. **De Castro, L. E.**—Estudo comparativo das cerdas cuneiformes das pernas dos drosofilídeos. [117] 13: 363–68, 1953. **Dresner, E.**—(See Hymenoptera.) **Evens, M.-J.-C.**—Dispersion géographique des glossines au Congo Belge. [Inst. Roy. Sci. Nat. de Belgique. Mém. 2d ser.] 48, 70 p., ill., 1953. **Gonçalves, P. C.**—Sôbre la presenca de Bercaea haemorrhoidalis no Rio de Janeiro (Sarcoph.). [117] 13: 359–62, 1953. **Grabowski & Dethier**—(See Anatomy.) **Harnisch, O.**—(See Anatomy.) **Hocking, B. & L. R. Pickering**—Observations on the bionomics of some northern species of Simuliidae. [44] 32: 99–119. **Hukuda, H.**—The influence of coexistense during larval stage of the body length of adults in Drosophila population. [J. Inst. Polytech. Osaka City Univ., Ser. D, Biol.] 2: 51–61. **Jones, J. C.**—(See Anatomy.) **Kramer, S.**—The musculature of the head of the phantom crane fly larva Bittacomorpha (Phychopteridae). [79] 94: 409–37, ill. **Léon, L. A. & P. Wygodzinsky**—Los simúlidos del Ecuador y su importancia en medicina tropical (Simulidae). [Revista Ecuat. Ent. y Parasit.] 1, no. 4, 23–40, ill., 1953. **Leví-Castillo, R.** —Dos especies nuevas de mosquitos de la sierra ecuatoriana. [Revista Ecuat. Ent. y Parasit.] 1, no. 4, 63–70, ill., 1953. —Notas sobre los mosquitos del Ecuador. II. Nuevas adiciones a la fauna culicidiana de la Republica del Ecuador. [Revista Ecuat. Ent. y Parasit.] 1, no. 4, 41–3, 1953. —Toxorhynchites aequatorianus n. sp., especie nueva de Toxorhynchites hallada en Pichilingue, Los Ríos Ecuador (Culicidae). [Revista Ecuat. Ent. y Parasit.] 1, no. 4, 71–6, ill., 1953. **Mellini, E.**—Insetti del Carduus nutans L. III. Euribia solstitalis L. (Trypetidae). [Boll. Ist. Ent. Univ. Bologna] 19: 97–119, ill., 1952/53. **Nowell, W. A.** —The dipterous family Dixidae in western North America. [Stanford Univ., Abstr. of Theses, 1951–52] 27: 148–9. **Quate, L. W.**—A revision of the Psychodidae of the Hawaiian Islands. [69] 15: 335–56, ill. (*k). **Rosillo, M. A.** —Resultados preliminares de un estudio bioecológico de los dipteros Trypetidae del noroeste argentino. [118] 7: 97–130, ill., 1953. **Sarà, M. & A. Smerdel**—Morfologia del dermascheletro del torace di Asilus crabroniformis L. (Asilidae). [95] 5: no. 3, p. 1–31, ill., 1953. **Steyskal, G. C.**—Colobaea and Hedria, two genera of Sciomyzidae new to America (Acalyptratae). [43] 86: 60–5, ill. (*). **Thienemann, A.**—Chironomus; leben, verbreitung und wirtschaftliche bedeutung der chironomiden. [Die Binnengewässer, Stuttgart] 20: 1–834, ill. **Vargas, L. & A. Díaz Nájera**—Nota sobre simúlidos del Ecuador. I. Descripción del macho de Simulium (Psilopelmia) escomeli Roubaud, 1909. [Revista Ecuad. Ent. & Parasit.] 1, no. 4, 17–22, ill., 1953.

COLEOPTERA—Barcells R., E.—Estudio biológico de Haltica lythri subespecie ampelophaga, Guerin-Meneville (Col. Halticinae). [Pub. Inst. Biol. Aplic. Barcelona] 14: 1–54, ill., 1953. **Bengry, R. P.**—A strange beetle from Jack's Hill. [Nat. Hist. Notes, Nat. Hist. Soc. Jamaica] 64: 59, ill. **Bielanska-Osuchowska, Z.**—(See Anatomy.) **Birukow, G.**—(See Anatomy.) **Brower, A. E.**—An European weevil in U. S. (Stomodes gyrosicollis Boh.). [47] 8: 6. **Brundin, L.**—Die palaearktischen arten der Atheta-untergattung Dimetrota Muls. et Rey. (Staphylinidae). [25] 5: 369–434, ill. (k). **Cazier, M. A.**—A review of the Mexican tiger beetles of the genus Cicindela. [14] 103: 227–310, ill. (*). **Costa Lima, A. da**—Coleópteros, pt. 2. [Insetos do Brasil] 8, no. 29, 323 pp., ill., 1953. **Edwards, J. G.**—The morphology of the male terminalis of beetles belonging to the genus Priacma (Cupesidae). [Inst. roy. Sci. Nat. de Belgique, Bull.] 29: no. 28, 8 pp., ill., 1953. —Observations on the biology of Amphizoidae. [47] 8: 19–24. **Español, F.**—Los tenebriónidos (Col.) de Baleares. [Trabajos Mus. Cien. Nat. Barcelona, n. s. Zool.] 1, no. 5.

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Biological evidence of sibling species in Aphytis maculicornis (Masi) (Aphelinidae). [43] 86: 90–6. **Heimpel, A. M.**—(See Anatomy.) **Leclercq, J.**—Un cas extraordinaire de gynandromorphisme chez Halictus sexcinctus (Apidae). [Inst. roy. Sci. Nat. Belgique, Bull.] 29: no. 46, 4 pp., ill., 1953. **Muir, D. A.**—(See Anatomy.) **Perkins, J. F.**—Notes on British Ichneumoninae with descriptions of new species. [35] 3: 103–76, ill., 1953. **Postner, M.**—Kopulationsverhalten bei den gattungen Bombus und Psithyrus (Apidae). [160] 151: 300–6, 1953. **Rothenbuhler et al**—(See Anatomy.) **Shulz-Langer, E.**—Beobachtungen zur copulation gefangen gehaltener wespen. [160] 152: 39–42. **Stultz, H. T.**—Note on occurrence of Agathis laticinctus (Cress.) (Braconidae) as a parasite of the eye-spotted bud moth (Lepidoptera: Tortricidae) in Nova Scotia. [43] 86: 96–8.

Review

DIE BINNENGEWÄSSER. VOL. 20. CHIRONOMUS. By August Thienemann. xvi + 834 pp. Schweizerbart'sche Verlagsbuchhandlung. Stuttgart. 1954. Pr. RM 143.50, Bound.

This work forms Volume 20 of a series dealing with the subject of inland waters. The author presents data on the biology of the Chironomidae (Tendipedidae) and Ceratopogonidae (Heleidae). These data have been gathered from many sources, many of them from his own writings and that of his associates. Among the numerous topics treated may be mentioned adaptation to environment, food habits, respiration and oxygen consumption, parthenogenesis, intersexes in relation to parasitism, parasitism, types of habitat, distribution, and the importance of the immature stages as food for fish. The numerous text figures illustrate details of structure, the graphs and tables deal with the statistics on chemical analyses, influence of temperature, counts of larvae found in fish stomachs, etc. The volume closes with a literature list of 47 pages, a checklist of the Chironomid species mentioned in the text, and a subject matter index that includes also names of the fish studied.

The author, Dr. Thienemann, for many years Director of the Hydrobiological Station at Plön, and Professor Emeritus at the University of Kiel merits thanks for placing this great summary before the limnologists, ecologists, entomologists and students of the life of inland waters.—O. A. JOHANNSEN, Cornell University.

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This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

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Conopidae of the World wanted. Will pay 10¢ to $1.00 for pinned and labelled specimens. S. Camras, 4407 N. Milwaukee Ave., Chicago 30, Illinois.

Anisoptera—Nearctic sp. wanted for exchange, espec. Ophiog., Arigom., Aeschna, Neurocor., Somatoc., Cordulia, Dorocor., Leucor. R. D. Cuyler, Dept. of Entomology, N. C. State College, Raleigh, N. C.

Bembicini and Stizini (Hym., Sphec.) of New World wanted for revis. study. Will return upon request or at end of project. James E. Gillaspy, Dept. of Zoology, Univ. Texas, Austin 12, Texas.

Agapema galbina. Will exchange cocoons of this moth for nature books. E. Frizzell, Route 4, Box 96, San Benito, Texas.

Wanted—Data on exact location of colonies of *Epibembex* (olim *Bembix*) (Hymenoptera), any species, any part of country, for biological studies. Howard E. Evans, Dept. Entomology, Cornell Univ., Ithaca, N. Y.

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ENTOMOLOGICAL NEWS

Vol. LXV OCTOBER, 1954 No. 8

A New Venezuelan Ambrysus (Hemiptera: Naucoridae)

By Ira La Rivers, University of Nevada, Reno

Subfamily **Ambrysinae** Usinger, 1941

Genus Ambrysus Stal, 1862

Ambrysus maldonadus sp. nov.

General appearance: A rather "square" species when superficially compared with the remainder of the genus. Size 10.5–11.0 mm. long and 6.75–7.0 mm. wide. Dorsum nearly unicolorous, somewhat lighter anteriorly, yellowish brown, embolia distinctly lighter than background color along outer edges, scutellum reddish-brown. Venter, particularly abdomen, lighter yellow than back, legs bright yellow.

Head: Prominently punctate, shiny; comparatively broad due to shallow concavity for reception of head into anterior margin of pronotum; vertex scarcely and only broadly protuberant before eyes, a prominent tuberculation on each side adjacent to anterior eye corner. Eyes slightly elevated above general head surface; viewed from above, outer and posterior eye edges forming a smooth, uninterrupted semicircle, the thin border along the posterior surface being only suggestively angulate at juncture between the two sides. Labrum rather weakly rounded along lower edge, ratio of length-to-width 26::50 (52%), uniform in color; mouth-parts similar to head in color. Head ratios are

(1) total length to width (including eyes) 40::67 (60%)
(2) anterior distance between eyes to posterior distance 28::34 (82%)
(3) anterior distance between eyes to inner eye length 28::30 (90%)
(4) posterior distance between eyes to greatest length of head posterior to this line 34::8 (24%).

Pronotum: Punctate-glistening, generally light brownish in background color, with yellowish-white around borders; two conspicuous thin black lines each about midway between center and lateral edge of its side, the lines curved slightly outward and unattached either fore or aft; thin blackish line producing a rather wide posterior border to pronotum, with large punctures spaced along posterior border of thin black line, punctures obsolescent along mid-line; lateral pronotal edges smooth, curved, curvature more pronounced at hind angle (postero-lateral angle), per cent of curvature (viewed perpendicularly to the frontal plane of section) about 18 (av. 66::12); venter dark brownish centrally and posteriorly, light yellow laterally, some pilosity along posterior edge and concentrated about median anterior keel; keel ridged its entire length, including posterior sloping face, which latter is the shortest portion of keel, ratio of anterior keel ridge to total keel length (including posterior sloping face), 55::80 (69%); prosternum fused with propleura, the point of union being nowhere a plane surface, the circular juncture at posterior sloping edge of keel being a marked depression, the juncture laterad of this being a raised keel. Pronotal ratios are

(1) width between anterior angles to width between posterior angles 65::130 (50%)
(2) median length to greatest width 47::130 (36%)
(3) distance between anterior and posterior angles on same side to perpendicular distance between anterior angle and baseline of pronotum 65::63.

Scutellum: More or less unicolorous, noticeably redder than pronotum in groundcolor with faint lightening in color laterally; ratio of three sides, anterior and two laterals, 96::70::69.

Hemelytra: Unicolorous deep brownish-red except for lighter areas in embolia, shiny, punctate, each puncture with a whitish spot; embolium well defined at its posterior edge in contrast to many Ambrysi in which the caudal emboliar limitations are obscure, long and narrow, length-to-width 68::20 (29%); emboliar crease pronounced anteriorly, very close to inner emboliar margin, beginning about midway and extending to anterior edge, embolium bicolored, light yellow in anterior two-thirds, reddish-brown posteriorly but without any abrupt contrast between the two. Hemelytra moderately exposing connexival lateral non-spinose edges posterior to embolia, and attaining abdominal tip. Wings functional, as long as hemelytra, and possessing a large "costal" cell.

Venter: The prothoracic venter has been discussed above. Emboliar venter lighter in color than thoracic venter. Connexival segments completely non-spinose, the angles of each segment being inconspicuously acute-angulate, each angle pressed closely to anterior corner of succeeding abdominal segment so as to give an almost smooth line to the general lateral contour, the slight depressions at these junctions are visible only with some moderate magnification; lateral connexival edges everywhere completely smooth under high magnification, lacking any suggestions of serration or dentation; connexival lateral curvature weak, no sudden inward dip of the edge in the shadow of the adjoining segment's angle; both sexes lacking the hydrofuge pelt on the medial posterior three-fourths of the abdomen, the bare, glistening surface beginning at anterior edge of segment IV and expanding caudad into a long, narrow wedge including the accessory genital structures; female subgenital plate consisting of a large, conspicuous, rounded medial process flanked by small, depressed lateral angles, the medial process extending considerably caudad of the side angles (see illustration); the outline of this subgenital plate is distinctive enough to segregate this species from any other *Ambrysus;* male genital process absent, represented only by a rounded angle, and with two distinctive, rather elongate blackish processes lying as indicated in the accompanying illustration. These processes are tentatively referred to as "procts." [1]

Legs. Forelegs: coxa and trochanter usual for the genus.[2] Femora swollen somewhat more than is normal for the genus, ratio of length to greatest median width is 64::50 (78%); tibia normal, combined tibia-tarsus, when closed, slightly overlapping adjacent (proximal) end of femur.

Midlegs: coxa and trochanter usual for the genus; femora rather robust, ratio of length to greatest median width 60::15 (25%), length 2.8 mm.; tibia with usual spination for the subgenus *Ambrysus*,[3] distal end ventrally with two prominent transverse rows of spines set across width of tibia, the terminal row set solidly across tibial apex, and composed of blunt spines unevenly decreasing in size outwardly, the secondary or proximal row not quite extending the tibial width and composed of similar blunt spines progressively and rather evenly decreasing in size outwardly, ratio of length to median ventral width 135::15 (11%), length 2.2 mm.; tarsus long, narrow, yellow, 3-segmented, first segment larger than usual although the smallest of the three segments, typically elongated beneath second segment, third segment the longest, terminating in two moderately curved claws somewhat swollen at bases.

Hindlegs: coxa and trochanter usual for the genus; femora rather robust, ratio of femoral length to median width 68::17 (25%), length 3.0 mm.; tibia essentially an enlargement of mesotibia, although comparatively more elongate, ratio of length to median ventral width 68::6 (9%), length 3.4 mm.; tarsus an enlargement of mesotarsus, and more conspicuously spined beneath with large, sparse bristles.

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[1] The relative proportions of these processes have not been discussed in any of my previous papers on Ambrysi, but an examination of other species of *Ambrysus* incident to describing *A. maldonadus* showed these structures to be quite varied in form in the genus. For the most part, as far as the remainder of the genus is concerned, these "procts" seem of relatively minor importance compared to the male genital processes as means of establishing species lines, but may, from the example provided by the new species, be expected to be occasionally valuable units of species measurement.

[2] For a generic summation of leg structures, which are remarkably similar in general aspect for the group as a whole, see pp. 290–291 in La Rivers, 1951A, Univ. Cal. Publ. Ent. 8: 277–338.

[3] La Rivers, 1951A: 290–291 for details.

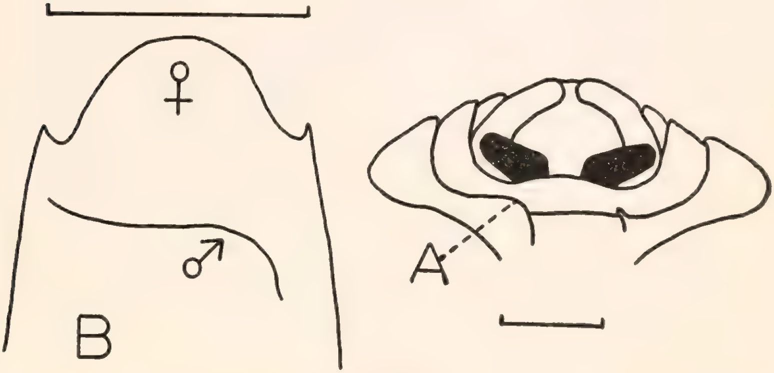

Fig. 1. Showing the diagnostic genitalic accessory structures of *Ambrysus maldonadus*. A. A general dorsal view of the specialized abdominal tip of the male, showing the conspicuous black "procts"; the dashed line originating at "A" terminates at the point usually bearing the male genital process. B. View of the female subgenital plate tip (venter) and an enlargement below of the smoothly rounded, non-process-bearing edge of the male. Drawn from the types. Lines indicate 1 millimeter.

Distribution: see types.

Type locality data: VENEZUELA—Territorio Amazonas: *Mount Marahuaca* (Upper Cunucunuma River), 27(v)50, el. approx. 4,000 ft.—J. Maldonado C. (Collected during an expedition sponsored by the University of Puerto Rico.)

Location of types and etymology: Holotypic male and *allotype* in the collection of the writer, Reno, Nevada; two *paratypes* (male and female) in the collection of J. Maldonado Capriles, to whom the species is dedicated.

Comparative data: Ambrysus maldonadus will form an additional monotypic group, differentiated by its distinctive "procts" and especially by the structure of the accessory genitalic structures, particularly those of the female. It will segregate in the following manner from all other Ambrysi known to me:

1. Metatibia ventrally with more than 3 distal, transverse rows of spines, the terminal row longest, each row decreasing in length proximally (Subgenus *Picrops*) . . *Ambrysus usingeri*

——Metatibia ventrally with 3 or less such rows (Subgenus *Ambrysus*) 2

2. Prosternum fused to propleura 3

——Prosternum free from propleura . . (remainder of subgenus)

3. Female subgenital plate rounded at tip with a small sharp angle flanking the rounded central tip on each side; male lacking a genital process, and possessing the large, conspicuous, black "procts" (see illustrations) . . . . *Ambrysus maldonadus*

——Without the above combination of characters (while other Ambrysi with fused propleura-prosternum may lack the genital process in the male, the shape of the tip of the female subgenital plate is entirely distinctive in *A. maldonadus*, as is the prominence of the "procts") . . . . (remaining species)

Obituary

Dr. Malcolm Burr, Fellow of the Royal Entomological Society of London and long a Corresponding Member of the American Entomological Society, distinguished author of "The Insect Legion," and also known for his comprehensive and basic studies of the Dermaptera, and of various groups of the Orthoptera, was struck and killed by a motor lorry July 13, 1954, in Istanbul, Turkey. A sketch of Dr. Burr's life and work will appear in an early number of "Entomological News."

Gift of Lepidoptera to American Museum

The J. B. Smith and G. D. Hulst Lepidoptera Collections, containing more than 32,000 specimens, including almost 6,000 species and 1,171 holotypes, has been given to the AMERICAN MUSEUM OF NATURAL HISTORY, New York, by RUTGERS UNIVERSITY. This valuable collection of North American moths is especially noteworthy for its noctuids and geometrids.

In announcing this gift, Dr. MONT CAZIER of the Museum's Department of Insects and Spiders stated that it represents an example of inter-institutional co-operation resulting in ultimate benefit to science as a whole. He credited the co-operation of Dr. BAILEY B. PEPPER, Chairman of the Department of Entomology at the New Jersey Agricultural Experiment Station of

Rutgers, Dr. John B. Schmitt, Associate Research Specialist in Entomology at the Station and Dr. William H. Martin, Dean of the College of Agriculture at Rutgers, with having made the acquisition of the collection possible.

Dr. J. B. Smith, who collected the noctuids, was New Jersey State Entomologist and Professor of Entomology at Rutgers University at the end of the last century. Dr. G. D. Hulst, a minister, is well-known for his work on geometrids.

At the Museum the collection will be under the supervision of Dr. Frederick H. Rindge, Associate Curator.

The Insect Fauna of an Iraq Oasis, The City of Baghdad

By Neal A. Weber, Swarthmore College, Swarthmore, Pa.

(*Continued from p. 182*)

Dermaptera

Earwigs are common, and *Labidura riparia* (Pall.) has been identified.[6]

Embioptera

Embiids of moderate size were flying from March 25 into May. Their silken runways are obscure compared with those of tropical species.

Hemiptera (Heteroptera)

Bugs (Pentatomidae: *Chroantha ornatula* (H.S.) and *Brachynema virens* (Klug) [6] heavily infested spiny plants (*Alhagi maurorum* Med.), one of the commonest plants of the irrigated areas.

The apparent absence of bedbugs (Cimicidae: *Cimex* sp.) is notable. The story told is that former and foreign rulers of Mesopotamia deliberately introduced bedbugs into the jails to prevent prisoners from enjoying a full night's sleep. The experiment was unsuccessful and the insects are unknown. The prevalence of tile floors and high temperatures may be responsible factors.

The backswimmer bugs (Notonectidae: *Anisops sardea* H.-S. and *varia* Fieber) [6] became numerous in a swimming pool in the latter part of the season and especially November, 1950. They disappeared with the drainage of the pool later that month, only to reappear in smaller numbers in April and the following October-November.

Hemiptera (Homoptera)

Coccids have been the object of extensive collecting by Bodenheimer.[7, 8] Genera with Baghdad records include *Aonidiella, Aspidiotus, Asterolecanium, Aulacaspis, Coccus, Lecanium, Lepidosaphis, Mytilococcus, Parlatoria, Phoenicoccus, Pseudococcus* and *Salicicola.* An unpublished record of *Parlatoria blanchardi* (Targ.) is from date palms at Dujailah April 30, 1951 (det. E. O. Essig). Common ants (*Acantholepis frauenfeldi* Mayr) were in attendance. Aphids were a considerable pest on Oleander and roses throughout the two winters 1950–52. Among their predators were the ant, *Tapinoma nigerrimum* Nyl, a minute wasp which oviposited on the aphids, and coccinellid beetles as well as the aphis-lions below.

Neuroptera

As would be expected in desert areas, the ant-lions, aphis-lions and other Neuroptera are abundant. The fauna is large, diverse and includes such striking types as *Palpares* and *Nemoptera.* Ant-lion pits in the dry soil are particularly noticeable in the spring and fall but were also seen on January 26. Aphis-lion larvae are also active in the winter.

Hymenoptera

The hymenopterous fauna is characterized by the scarcity of Chalastogastra, the relative inconspicuousness of the Terebrantia, the moderate development of Vespoidea and Apoidea and the prominence of Sphecoidea seasonally and Formicoidea at all times. Morice [9] has listed various species from Iraq, many of which will doubtless be found in Baghdad though not specifically so recorded. Among these are mutillids, scoliads, psammocharids, *Sceliphron, Chlorion, Sphex, Cerceris,* bembecines, halictids, andrenids, megachilids, eumenids, odynerids and chrysids. New records are: A large black and gold bee, *Halictus holtzi* Schulz (Halictidae) [6] from *Acacia Farnesiana* Willd. flowers, the vespids, *Vespa orientalis* L., *Polistes olivaceus* Deg. (= *hebraeus* F.) and *gallicus* L. and *Eumenes campaniformis* v. *esuriens* Fabr.[10] Some of the observations on ants have previously been published.[11]

Coleoptera

The coleopterous fauna is characterized by the abundance and size of tenebrionids, the common species having the elytra fused and therefore flightless. One of the most conspicious throughout the year is *Oenera hispida* Forsk.[12] Along the sandy shores of the Tigris River are cicindellids such as *Cicindella melancholica* and on the open plains is the scarab, *Scarabaeus gangeticus* Castln. The hydrophilid, *Ochthebius,* depends on irrigation ditches and unidentified coccinellids are common on the Oleander hedges, preying on aphids.

Lepidoptera

The moths and butterflies are one of the best known groups through the efforts of Peile and others,[13, 16] and especially, in later years, Wiltshire.[14, 15] The commonest species personally observed appeared to be *Pieris rapae* L. though *Papilio machaon* L. and *Lycaena phloeas* L. were striking when flying in the gardens. The fauna is mostly palaearctic with the largest element Anatolian—Iranian.

Diptera

The dipterous fauna appears to be little known. A few have been identified.[6] The most numerous and conspicuous is the housefly, *Musca domestica* L. and it and the abundant blowfly (*Calliphora vicina* R.D.) and fleshfly (*Sarcophaga* (*Parasarcophaga*)) occur throughout the year. Mosquitoes (*Culex pipiens* L.) are seldom an important pest though they feed in houses throughout the winter. Biting midges (Ceratopogonidae) may be locally a pest, as in May, and sandflies (*Phlebotomus*) are one of the insects of greatest medical significance, being the vector of the prevalent cutaneous Leishmaniasis (Baghdad boil). The dogfly (Hippoboscidae—*Hippobosca longipennis* Fabr.)[10] is widely distributed as is the sheep botfly (Oestridae: *Oestrus ovis* L.).[12] Horseflies (Tabanidae: *Tabanus regularis* Jaen.)[10] occasionally bite, as on May 19, and deerflies of the same family (*Chrysops* sp.) are rare. The syrphid (Syrphidae: *Tubifera tenax* (L.)) appears common as are asilids and other representatives of the major groups of Diptera.

Siphonaptera

Fleas (Pulicidae: *Ctenocephalides felis* (Bouché) and *Pulex irritans* L.)[10] were taken from a mongoose and a nest of feral kittens in our garden was crawling with unidentified fleas. The heat and dryness, however, do not appear favorable for their general occurrence.

LITERATURE CITED *

1. OMER-COOPER, J. 1923. Jour. Bombay Nat. Hist. Soc., 29: 391–404.
2. SIMON, E. 1880. Bull. Soc. Ent. France, 10: 29.
3. PARKER, H. W. 1948. *In litteris.*
4. CHOPARD, L., and UVAROV, B. P. 1921–22. Jour. Bombay Nat. Hist. Soc., 27: 47–59, 61–70; 28: 351–370.
5. REHN, J. A. G. 1952. *In litteris.*
6. U. S. Dept. Agr., Bur. Ent. and Plant Quar. Identifications through Mr. C. F. W. Muesebeck, Sept. 1951. *In litteris.*
7. BODENHEIMER, F. 1943. Iraq Min. Econ. Bull. No. 28.
8. ——. 1944. Bul. Soc. Fouad I Ent., 28: 81–84.
9. MORICE, F. D. 1921. Jour. Bombay Nat. Hist. Soc., 27: 71–83, 28: 185–196.
10. BEQUAERT, J. 1952. *In litteris.*
11. WEBER, N. A. 1952. Observations on Baghdad Ants I. Publ. No. 1, 30 pp. College of Arts and Science, Baghdad, Iraq.
12. British Museum (Natural History), 1951. Identifications in person.
13. PEILE, PROUT, ROTHSCHILD, WATKINS, and BUXTON. 1921–22. Jour. Bombay Nat. Hist. Soc., 28: 135–155, 163–184, 240–267.
14. WILTSHIRE, E. P. 1949, 1951. Bull. Soc. Fouad I Entom.; Jour. Bombay Nat. Hist. Soc., 49: 637–660.
15. ——. 1952–53. *In litteris.*
16. HINGSTON, R. W. G. 1925. Nature at the Desert's Edge. Boston, Small, Maynard and Company.

* Pagination of the Jour. Bombay Nat. Hist. Soc. is as given in the collection called the Survey of Iraq Fauna, published in Bombay under the authority of the Iraq Government.

Current Entomological Literature

Compiled by VENIA T. PHILLIPS, Librarian

Academy of Natural Sciences of Philadelphia

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania pertaining to entomology, including all arthropods except Crustacea. Coverage will be world-wide as regards major contributions to systematics as well as for all papers on morphology, physiology, embryology, etc. In addition, for species from the Americas and the Pacific (Nearctic, Neotropical and Polynesian regions) all minor contributions to taxonomy, distribution, etc., will also be recorded.

This list gives references of the year 1954 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

GENERAL—Auber, J.—Microtechnique hématologique. [59] 9: 99–100, 1953. **Barnes, H. F.**—The biological approach to the species problem in gall midges (Dipt., Cecidomyidae). [Suom. Hyonteis. Aika., Ann.] 19: 2–24, 1953. **Boyd, W. M.**—Insects of importance in New Jersey nurseries. [Circ. N. J., Dept. Agr., Div. Plant Ind.] 390, 175 pp., ill., 1953. **Burton, G. J.**—Suggested improvements for an unbreakable aspirator and killing tube. [92] 14: 27–30, ill. **Downe, A. E. R. & A. S. West**—Progress in the use of the precipitin test in entomological studies. [43] 86: 181–84. **Fichter, E.**—An ecological study of invertebrates of grassland and deciduous shrub savanna in eastern Nebraska. [12] 51: 321–439, ill. **Flanders, S. E.**—Fecundity of entomophagous insects under mass culture, an effect of environmental resistance. [50] 35: 245–49. —Simplified method for the study of interacting host-parasite populations. [50] 35: 292–93. **Goetsch, W.**—Beitrage zur biologie der sozialen insekten in Spanien. [61] 29: 235–80, ill., 1953. **Gordon, E. L.**—Insect homes. [Cornell Rur. Sch. Leaflet] 47: no. 3, 32 pp., ill. **Green, G. W. & W. R. Henson**—A new type of coprometer for laboratory and field use. [43] 85: 227–30, ill., 1953. **Hairston, N. G. & G. W. Byers**—The soil arthropods of a field in southern Michigan: a study in community ecology. [Contr. Lab. Vertebrate biology, Univ. Mich.] 64, 37 pp. **Hayward, K. J.**—An entomologist in Argentina. VI. Citrus entomologist. [Ent. Record] 66: 138–42. **Hurd, P. D., Jr.**—"Myiasis" resulting from the use of the aspirator method in the collection of insects. [Science] 119: 814. **Judd, W. W.**—Insects reared from goldenrod galls caused by Eurosta solidaginis Fitch (Trypetidae) in southern Ontario. [43] 85: 294–96, 1953. **MacPhee, A. W. & K. H. Sanford**—The influence of spray programs on the fauna of apple orchards in Nova Scotia. VII. Effects on some beneficial arthropods. [43] 86: 128–35. **Malcomson, R. O.**—Arthropod teratology. [43] 85: 313–15, ill., 1953. **Miles, P. M.**—A trap designed to collect insects attracted by "Sugar." [60] 90: 86–7, ill. **Oakland, G. B.**—Determining sample size. [43] 85: 108–13, 1953. **Overlaet, F. G.**—Essais de définition de l'instinct. [135] 89: 312–19, 1953. **Palm, C. E.**—The growing responsibility of entomology to human welfare. [76] 47: 1–6. **Pendleton, R. C. & A. W. Grundmann**—Use of P^{32} in tracing some insect-plant relationships of the thistle, Cirsium undulatum. [50] 35: 187–91. **Peterson, A.**—A manual of entomological techniques (7th ed.). Edwards Bros., Ann Arbor, Mich. 7.50. 367 p., 182 pls., 17 tables. (Review by M. T. James [52] 47: 60). **Rautenberg, L. E.**—Beiträge zur kenntnis alter naturwissenschaftlicher werke. [28] 4: 99–104, ill. **Ryckman, R. E.**—A method of collecting large quantities of feces from Triatominae infected with Trypanosoma cruzi. [76] 47: 170–71. **Shemanchuk, J. A., J. W. T. Spinks & F. J. H. Fredeen**—A method of tagging prairie mosquitoes with radio-phosphorus. [43] 85: 269–72, 1953. **Sullivan, C. R.**—Use of radioactive cobalt in tracing the movements of the white-pine weevil, Pissodes Strobi Peck (Curculionidae). [43] 85: 273–76, 1953. **Sun, Y. P. & J. E. Pankaskie**—Drosophila, a sensitive insect, for the microbioassay of insecticide residues. [76] 47: 180–81. **Theodor, O. & A. Moscona**—On bat parasites in Palestine. I. Nycteribiidae, Streblidae, Hemiptera, Siphonaptera. [112] 44: 157–245, ill. **Thorsteinson, A. J.**—The role of host selection in the ecology of phytophagous insects. [43] 85: 276–82, 1953. **Tissot, A. N., M. Murphy, Jr., & R. E. Waites**—A brief history of entomology in Florida. [64] 37: 51–71. **Ueno, H.**—The effect of biological conditioning of environment by the other insect species. [109] 9: 63–8. **Utida, S.**—Fluctuations in the interacting populations of host and its parasite in relation to the biotic potential of host species. (In Japanese with English summary.) [109] 9: 59–62. **Vappula, N. A.**—Finnish entomological literature published in 1951 including economic entomology and control of insect pests. [Suom. Hyonteis. Aika., Ann.] 19: no. 1a, 18 pp., 1953. **Webster, A. P. & J. D. DeCoursey**—The catch curve of insects. [53] 47: 178–89.

BIOGRAPHIES, OBITUARIES—Blair, Kenneth Gloyne, 1882–1952.—Obituary, with portrait, by C. N. Hawkins. [144] 1952/53: xliii–xliv. **Britten, Harry,** 1870–1954.—Obituary by L. W. Grensted. [60] 90: 72. **Carpenter, M. M.**—Bibliography of biographies of entomologists (Supplement). [12] 50: 257–348, 1953. **Heikertinger, Franz,** 1876–1953.—In memoriam, by C. H. Lindroth. [108] 19: 57. **Larsen, Carl Sophus,** 1874–1952.—Obituary, with portrait, by N. L. Wolff. [Ent. Meddel.] 26: 475–81, 1953. **Linnaniemi, Walter Mikael,** 1876–1953.—Obituary notice and biography, with portrait, by Uunio Saalas. (Repeated in German.) [Suom. Hyönteis. Aika., Ann.] 19: 41–52, 1953. **Parshley, Howard Madison,** 1884–1953.—Biography, with portrait, by R. L. Usinger. [111] 30: 1–4. **Sperry, John L.,** 1894–1954.—Short biographical account by A. L. Melander. [36] 49: 55–6. **Wahlgren, Einar,** 1874– .—80 år den 5 mars 1954. C. H. Lindroth honors his birthday with short biography and portrait. [108] 19: 1–4.

ANATOMY, PHYSIOLOGY, MEDICAL—Agrell, I.—Histolysis, histogenesis, and differentiation during insect metamorphosis in relation to metabolic changes. [J. Embry. & Expt. Morph.] 1: 279–82. **Baldwin, W. F.**—Acclimation and lethal high temperatures for a parasitic insect. [44] 32: 157–71. **Beck, G. S.**—The nature of the stimulus in the "solidago" gall induced by the larva of Gnorimoschema gallaesolidaginis. [Brookhaven Symp. Biol.] No. 6: 235–51. **Bolwig, N.**—An attempt to analyse the behaviour of the larvae of the hip fly (Spilographa alternata). [Ent. Meddel.] 26: 577–85, ill., 1953. **Bradbury, F. R. & G. Armstrong**—A method for measuring the narcotic action of chemicals using the grain weevil, Calandra granaria. [20] 41: 65–76. **Casida, J. E. & others**—Metabolism of schradan by plants and insects to a toxic phosphoramide oxide. [76] 47: 64–71. **Chapman, J. A. & R. Craig**—An electrophysical approach to the study of chemical sensory reception in certain insects. [43] 85: 182–89, ill., 1953. **Colombo, G.**—L'oogenesi negli ortotteri. I. Ricerche istologiche e citometriche in Anacridium aegyptium L. dalla schiusa all'imagine. [7] 34: 191–232, ill., 1953. **Cordeiro, A. R. & T. Dobzhansky**—Combining ability of certain chromosomes in Drosophila willistoni and invalidation of the "wild-type" concept. [15] 88: 75–86. **Cutright, C. R.**—A codling moth population resistant to DDT. [76] 47: 189–90. **Effy, G. W. & others**—Effects on some insects of the blood and manure of cattle fed certain chlorinated hydrocarbon insecticides. [76] 47: 35–8. **Florey, F.**—Experimentelle erzeugung einer "neurose" bei der honigbiene. [100] 41: 171. **Fung, S.-T. C.**—Sex development in Drosophila melanogaster as influenced by a gene in the third chromosome. (Abstract.) [73] 28: 321–22. **Gans, M.**—Étude génétique et physiologique du mutant Z de Drosophila melanogaster. [39] Suppl. 38, 90 pp., ill., 1953. **Glick, P. A. & J. P. Hollingsworth**—Response of the pink bollworm moth to certain ultraviolet and visible radiation. [76] 47: 81–6, ill. **Good, M. E., F. O. Morrison & E. Mankiewicz**—Lipidolytic enzymes extracted from Galleria mellonella L. (Pyralidae) reared on natural and artificial media. [43] 85: 252–53, 1953. **Hadorn, E.**—Regulation and differentiation within field-districts in imaginal discs in Drosophila. [J. Embry. & Expt. Morph.] 1: 213–16. **Henke, K.**—Über zelldifferenzierung im integument der insekten und ihre bedingungen. [J. Embry. & Exptl. Morph.] 1: 217–26. **Hewlett, P. S.**—Micro-drop applicator and its use for the treatment of certain small insects with liquid insecticide. [20] 41: 45–64. **Huger, A.**—Experimentelle eliminerung der symbionten aus den myzetomen des getreidekapuziners, Rhizopertha dominica F. [100] 41: 170–71. **Johnson, B.**—Effect of flight on behaviour of Aphis fabae Scop. [98] 173: 831–32. **King, R. C.**—Studies with radiophosphorus in Drosphila. [78] 125: 331–52. **Körner, H.**—Die nematodenfauna des vergehenden holzes und ihre beziehungen zu den insekten. [158] 82: 245–353. **Matsumoto, S., H. Santa & M. Otuka**—Studies on the diapause in the cabbage armyworm, Barathra brassicae L. II. The effect of temperature and photoperiod on the induction of diapause. (In Japanese, with English summary.) [109] 9: 45–51. **Merrell, D. J.**—Sexual isolation between Drosophila persimilis and Drosophila pseudoobscura. [15] 88: 93–9. **Paget, O. E.**—A cytological analysis of irradiated populations (Drosophila melanogaster). [15] 88: 105–07. **Pielou, D. P.**—Apparatus for studying behavior responses of insects to olfactory stimuli in still air. [44] 32: 209–14, ill. **Pigoń, A. & B. Węglarska.**—The respiration of Tardigrada: A study in animal anabiosis. [Acad. Pol. sci., Bull.] 1: 69–72, 1953. **Pimentel, D., H. H. Schwardt & J. E. Dewey**—The inheritance of DDT-resistance in the house fly. [52] 47: 208–13. **Pleskot, G. & E. Pomeisl.**—Bedeutung der lichtintensität beim schlüpfen und bei der eiablage von aquatischen insekten, im besonderen von Torleya belgica (Ephem.). [Sonderheft, Wetter u. Leben] 1: 41–

7, 1952. **Prat, H.**—Analyse micro-calorimétrique des variations de la thermogenèse chez divers insectes. [44] 32: 172–97, ill. **Ramsay, J. A.**—Active transport of water by the malpighian tubules of the stick insect, Dixippus morosus (Orth.). [77] 31: 104–13. **Salt, R. W.**—The influence of food on cold hardiness of insects. [43] 85: 261–69, 1953. **Schimitschek, E.**—Ursachen von massenvermehrungen der tannentrieblaus Dreyfusia Nüsslini C. B. (Hem.). [Wetter u. Leben, Sonderheft] 1: 48–54, 1952. **Schneider, H.**—Künstlich symbiontenfrei gemachte kornkäfer (Calandra granaria). [100] 41: 147–48. **Sobels, F. H.**—Mutation tests with a formaldehyde-hydrogen peroxide mixture in Drosophila. [15] 88: 109–12. **Sokal, R. L. & P. E. Hunter.**—Reciprocal selection for correlated quantitative characters in Drosophila. [Science] 119: 649–51. **Steiner, G. & R. Wette**—Über die wirkung eines homogenen duftfeldes auf optische wahlen von Drosophila hydei. [100] 41: 172. **Sullivan, C. R. & W. G. Wellington**—The light reactions of larvae of the tent caterpillars, Malacosoma disstria Hbn., M. Americanum (Fab.), and M. Pluviale (Dyar) (Lasiocampidae). [43] 85: 297–310, 1953. **Utida, S.**—Effect of host density upon the population growth of interacting two species of parasite. Experimental studies on synparasitism. 2d report. (In Japanese with English summary.) [109] 9: 102–07. **Varzandeh, M., W. N. Bruce & G. C. Decker**—Resistance to insecticides as a factor influencing the biotic potential of the house fly. [76] 47: 129–34, ill. **Wall, W. J., Jr. & A. H. P. Swift**—The digestive enzymes of the firebrat (Thysanura). [76] 47: 187–88. **Way, M. J.**—The effect of body weight on the resistance to insecticides of the last instar larva of Doataraxia oleracea L., the tomato moth. [20] 41: 77–87. **Wigglesworth, V. B.**—Growth and regeneration in the tracheal system of an insect, Rhodnius prolixus. [116] 95: 115–37, ill. **Wolfe, L. S.**—Cuticle. (See Diptera.) **Yamasaki, T. & T. Ishii**—Studies on the mechanism of action of insecticides. VI. DDT symptoms in the cockroach, with special reference to the effect of temperature. (In Japanese, with English summary.) [109] 9: 87–96.

ARACHNIDA AND MYRIOPODA—**André, M.**—Acariens Phytoptipalpidae parasites des orchidées, cactées et plantes grasses cultivées en serres (suite). II. Brevipalpus cactorum Oud. et B. confusus Baker. [Bull. Mus. Nat. d'Hist. Natur. Paris, 2d ser.] 25: 563–71, ill., 1953. **Baerg, W. J.**—The brown widow and the black widow spiders in Jamaica (Araneae, Theridiidae). [52] 47: 52–60. **Ballard, R. C.**—The biology of the predaceous mite Typhlodromus fallacis (Garman) (Phytoseiidae) at 78° F. [106] 54: 175–79. **Bonnet, P.**—Difficultés de nomenclature chez les aranéides. VI. Identification des genres et espèces au nom erroné. [Bull. Soc. d'Hist. Nat. Toulouse] 88: 137–62, 1933.— —VIII. Le nom de genre Sason. *Ibid.,* p. 295–96, ill. **Causey, N. B.**—The millipeds collected in the Pacific northwest by Dr. M. H. Hatch. [52] 47: 81–86, ill. **Crabill, R. E., Jr.**—A new Zygethopolys from Kentucky and a key to the members of the genus (Chilopoda: Lithobiomorpha: Lithobiidae: Ethopolyinae). [43] 85: 119–20, 1953. **Firstman, B.**—The central nervous system, musculature and segmentation of the cephalothorax of a tarantula (Eurypelma californicum Ausserer). [90] 19: 14–40, ill. **Hantsbarger, W. M. & W. J. O'Neill**—Predaceous mites of the family Laelaptidae in north-central Washington. [76] 47: 176–77. **Henry, L. M.**—The cephalic nervous system and segmentation in the Pedipalpida and the Solpugida (Arachnida). [90] 19: 2–13, ill. **Johnson, B. M.**—The millipeds of Michigan. [Papers, Mich. Acad. Sci.] 39: 241–52, ill. **Levi, H. W.**—Spiders of the genus Euryopis from North and Central America (Araneae, Theridiidae). [13] no. 1666, 48 pp. (*). —Spiders of the new genus Theridiotis (Araneae: Theridiidae). [11] 73: 177–89, ill. **& H. M. Field.**—The spiders of Wisconsin. [12] 51: 440–67, ill. **Loomis, R. B. & L. J. Lipovsky**—Two new chigger mites (genus Trombicula) from the central United States. [82] 27: 47–53, ill. **Mitchell, R. D.**—A description of the water-mite, Hydrovolzia gerhardi new species, with observations on the life history and ecology. [97] no. 134, 9 pp., ill. **Pigoń & Weglarska**—(See Anatomy). **Rayment, T.**—Incidence of acarid mites on the biology of bees. [Austral. Zool.] 12: 26–38, ill. **Rempel, J. G.**—Siamese twin embryos of the black widow spider, Latrodectus mactans (Fabr.). [44] 32: 240–43, ill. **Roewer, C. F.**—Araneae-Orthognatha (Arachnoidae). [Explor. Parc Nat. Upemba, Miss. de Witte] 22, 80 pp., ill., 1953 (*k). **Tuzet, O. & J.-F. Manier**—Les organes hématopoiétiques et le sang des myriapodes diplopodes (Etude par le microscope à contraste de phase). [39] 88: 90–98, ill. **Vachon, M.**—Nouveaux cas du phorésie chez les pseudoscorpions. [Bull. Mus. d'Hist. Nat. Paris, 2d ser.] 25: 573–75, 1953. **Vergani, A. R.**—Acaros de interés económico para nuestros cultivos. [118] 7: 213–52, ill., 1953.

SMALLER ORDERS—Bailey, S. F.—A review of the Melanthripinae with descriptions of two new species (Thysanoptera, Terebrantia). [56] 56: 78–85, ill. **Balát, F.**—Mallophaga zjištěna na ptácich Moravy a Slovenska. (French summary.) [Spisy Masarykovy univ. Publ. Fac. Sci.] 348: 169–76, 1953. **Barrera, A.**—Sinopsis de los sifonápteros de la Cuenca de México. [87] 7: 155–248, ill., 1953 (k). **Carpenter, F. M.**—Additional notes on Brachypanorpa (Mecoptera). [115] 60: 154, 1953. **Carriker, M. A., Jr.**—Studies in neotropical Mallophaga, XI: bird lice of the suborder Amblycera, genus Dennyus Neumann. [151] 103: 533–49, ill. **Cassagnau, P.**—Contribution à l'étude d'un collembole, Proctostephanus stuckeni. [Bull. Soc. d'Hist. Nat. Toulouse] 88: 39–58, ill., 1953. **Day, W. C.**—New species and notes on California mayflies. II. [111] 30: 15–34, ill. **Delany, M. J.**—Studies on the life history and ecology of Dilta littoralis (Wormsley, 1930) (Thysanura, Machilidae). [126] 105: 31–63, ill. **Denning, D. G.**—New species of western Trichoptera. [82] 27: 57–64, ill. **Edney, E. B.**—Woodlice and the land habitat (Isopoda). [Biol. Reviews] 29: 185–219. **Emerson, K. C.**—Two new species of Machaerilaemus (Mallophaga, Menoponidae). [82] 27: 44–6, ill. **Goetsch, W.**—Termites. (See General.) **Goss, R. J.**—Ovarian development and oogenesis in the book louse, Liposcelis divergens Badonnel (Psocoptera, Liposcelidae). [52] 47: 190–207, ill. **Joyce, C. R.**—Anoplura and Mallophaga infesting mammals of Iowa. (Abstract.) [73] 28: 347–48. **Kaiser, P.**—Anoplotermes pacificus, eine mit pflanzenwurzeln vergesellschaftet lebende termite. [Mitt. Hamb. Zool. Mus.] 52: 77–92, ill., 1953. **Knowlton, G. F.**—Sira invades homes. [36] 49: 87. **Lieftinck, M. A.**—Handlist of Malayasian Odonata, a catalogue of the dragonflies of the Malay Peninsula, Sumatra, Java and Borneo, including the adjacent small islands. [Treubia] 22, Suppl. 202 pp. **Maddux, D. E.**—A new species of dobsonfly from California (Megaloptera: Corydalidae). [111] 30: 70–71. **Munroe, E. G.**—Chauliodes disjunctus Walker: a correction, with the descriptions of a new species and a new genus (Megaloptera: Corydalidae). [43] 85: 190–92, ill., 1953. **Pleskot & Pomeisl**—Ephem. (See Anatomy.) **Popova, A. N.**—Lichinki strekoz fauny SSSR (Odonata). [Opredeliteli po faune SSSR] 50: 1–234, ill., 1953. **Pratt, H. D. & J. O. Harrison.**—Nearctopsylla (Hollandiana) georgiana, new species from Georgia (Siphonaptera, Dolichopsyllidae). [56] 56: 123–26, ill. **Robert, F. A.**—Les odonates du Parc du Mont Tremblant. [43] 85: 316–38, 1953. **Smit, F. G. A. M.**—New bat-fleas (Siphonaptera: Ischnopsyllidae). [112] 44: 144–56, ill. **Stannard, L. J.**—Actinothrips (Hybridothrips) oneillae, new subgenus and species (Thysanoptera, Phlaeothripidae). [56] 56: 71–74, ill. **Urquhart, F. A.**—The introduction of the termite into Ontario. [43] 85: 292–93, ill., 1953. **Verrier, M.-L.**—Rassemblements et migrations chez les éphémères. [39] 88: 68–89, ill. **Wall, W. J.**—A redescribed species and a new genus and species of the family Lepidmatidae in California (Thysamura). [111] 30: 72–76, ill. —Mirolepisma deserticola Silvestri, a myrmecophile from California (Thysanura: Lepismatidae). [111] 30: 56–8. **Wall & Swift.**—Thysanura. (See Anatomy.) **Wellhouse, W. T.**—The embryology of Thermobia domestica Packard (Thysanura). (Abstract.) [73] 28: 416–17.

ORTHOPTERA—Arnaud, P. H.—Gryllacrididae. (See Diptera.) **Beaudry, J. R.**—A simplification of Hubbell's method for trapping and preserving specimens of Ceuthophilus (Gryllacrididae). [43] 86: 121–22. **Beier, M.**—Mantidea und Pseudophyllinae. [Explor. Parc Nat. Upemba, Miss. de Witte] 20, 77 pp., ill. (*k). **Colombo, G.**—(See Anatomy.) **Ebner, R.**—Ein neuer fall von veraenderungen an einer heuschrecke (Acrididae) durch einen parasiten. [61] 29: 119–21, ill., 1953. **Haskell, P. T.**—A culture method for Acheta domestica (L.) (Orth., Gryllidae). [60] 90: 94–5. **Hilchey, J. D. & R. J. Block.**—Quantitative amino acid composition of the German cockroach, Blatella germanica (L.). [Contrib. Boyce Thompson Inst.] 17: 380–82. **Jauch, C. & A. Ogloblin**—Un hongo parásito de acridios. [118] 7: 193–212, ill., 1953. **McFarlane, J. E.**—The morphology of the chortotonal organs of the antenna, mouthparts and legs of the lesser migratory grasshopper, Melanoplus mexicanus mexicanus (Saussure). [43] 85: 81–102, ill., 1953. **Maxwell-Darling, R. C.**—Locusts in the Sudan. [Sudan Notes and Records] 34: 5–16, 1953. **Popov, G. B.**—Notes on the behavior of swarms of the desert locust (Schistocerca gregaria Forskal) during oviposition in Iran. [126] 105: 65–77, ill. **Putnam, L. G.**—(See Hymenoptera.) **Roth, L. M. & E. R. Willis**—Anastatus floridanus (Hymen.: Eupelmidae) a new parasite on the eggs of the cockroach Eurycotis floridana. [9] 80: 29–

41, ill. —The reproduction of cockroaches. [131] 122, no. 12, 49 pp., ill. **Uvarov, B. P.**—Synonymic nomenclatorial notes on Acrididae. [57] 15: 146–47. **Viatte, G. & R. Huron**—Étude statistique du comportement de Blatella germanica dans le problème du T. [Bull. Soc. d'Hist. Nat. Toulouse] 88: 346–54, 1953.

HEMIPTERA—Barker, J. S. & O. E. Tauber—Fecundity of the pea aphid on garden pea under various combinations of light, moisture and nutrients. [76] 47: 113–16. **Beirne, B. P.**—Canadian species of Latalus (Cicadellidae). [43] 86: 123–27, ill. **& D. A. Young**—The North American species of Cicadula (Cicadellidae). [43] 85: 215–26, ill., 1953 (k). **Connell, W. A.**—Aphids from plant roots. [52] 47: 87–92. **Craig, W. S.**—Biology and control of the woolly apple aphid in Iowa nurseries. (Abstract.) [73] 28: 296–97. **Cumming, M. E. P.**—Notes on the life history and seasonal development of the pine needle scale, Phenacaspis pinifoliae (Fitch). [43] 85: 347–52, ill., 1953. **DeLong, D. M. & J. Guevara.**—Studies of the genus Empoasca (Homoptera-Cicadellidae)—XIV. Some new species of Mexican Empoasca. [36] 49: 81–86, ill. **Drake, C. J.**—Four new species of American Tingidae. [56] 56: 75–8. —Two new Tingidae. [115] 60: 151–54. **Elkins, J. C.**—A synopsis of Atrachelus Reduviidae). [56] 56: 97–120, ill. (*k). **Graham, K. & M. L. Prebble**—Studies of the Lecanium scale, Eulecanium coryli (L.), and its parasite, Blastothrix sericea (Dalm.), in British Columbia. [43] 85: 153–81, 1953. **Gray, H. E.**—The development of the citrus mealybug. [76] 47: 174–76. **Hottes, F. C.**—Description of a new genus and species of Aphidae. [31] 67: 99–102, ill. **& E. O. Essig.**—A new species of Cinara with notes on some western species of Aphidae. [31] 67: 93–99, ill. **Hungerford, H. B.**—First Florida record for Hydrometra consimilis Barber. [82] 27: 80. **Johnson, B.**—(See Anatomy.) **Kennedy, J. S. & C. O. Booth**—Host alternation in Aphis fabae Scop. II. Changes in the aphids. [20] 41: 86–106. **Knowlton, G. F.**—Aphid records from United States and Canada. [36] 49: 47–48. **Knull, D. J.**—New Erythroneura (Eratoneura) of the Dira group with notes (Homoptera: Cicadellidae). [106] 54: 170–74, ill. **Leston, D.**—Strigils and stridulation in Pentatomoidea: some new data and a review. [60] 90: 49–56. **Macan, T. T.**—A contribution to the study of the ecology of Corixidae. [74] 23: 115–41. **MacGillivray, M. E.**—Note on Myzus certus (Walker), an aphid new to North America (Aphidae). [43] 86: 190.

Miyamoto, S.—Biology of Helotrephes formosanus Esaki et Miyamoto, with descriptions of larval stages. [Sieboldia] 1: 1–10, ill., 1952. —Biology of Microvelia diluta Distant, with descriptions of its brachypterous form and larval stages. [Sieboldia] 1: 113–33, ill., 1953. **Morrison, H.**—A second species of Ortheziola Sulc (Coccoidea). [56] 56: 120–23, ill. (*). **Müller, H. J.**—Der saisondimorphismus bei zikaden der gattung Euscelis Brullé Auchenorrhyncha). [28] 4: 1–56, ill. —Uber das schluppen der zikaden (Homoptera Auchenorrhyncha) aus dem ei (2. Beitrag zur biologie mitteleuropaischer zikaden). Stuttgart Zoologica, v. 37, no. 4. (Review by Z. P. Metcalf in [52] 47: 214.) **Nuorteva, P.**—Über die phänologie der baumbewohnenden Zikaden in Vuohiniemi (Kirchsp. Hattula) in Südfinnland. [Suom. Hyönteis. Aika., Ann.] 18: 198–204, ill., 1952. **Porter, T. W.**—A new species of Hebrus Curtis from the Philippine Islands (Hebridae). [82] 27: 78–9, ill. **Putman, W. L.**—Notes on the bionomics of some Ontario cercopids. [43] 85: 244–48, 1953. **Reali, G.**—Studio morfologico su Diaspis calyptroides Costa. [Boll. Zool. Agr. Bach.] 20: 27–49, ill. **Ryckman, R. E.**—(See General.) **Sailer, R. I.**—Concerning Pangaeus biliniatus (Say) (Pentatomidae). [82] 27: 41–4. **Schimitschek, E.**—(See Anatomy.) **Slater, J. A.**—Notes on the genus Labops, Burmeister in North America, with the description of three new species (Miridae). [36] 49: 57–65, ill. (*k). **Strickland, E. H.**—An annotated list of the Hemiptera (S. L.) of Alberta. [43] 85: 193–214, 1953. **Synave, H.**—Cixiidae. [Explor. Parc Nat. Upemba, Miss. de Witte] 23, 49 pp., ill., 1953 (*k). **Wertheim, G.**—Studies on the biology and ecology of the gall-producing aphids of the tribe Fordini (Aphidoidea) in Israel. [126] 105: 79–96, ill. **Whitcomb, W. D.**—The biology and control of Lygus campestris L. on celery. [Bull. Mass. Agr. Expt. Sta.] 473, 15 pp., ill., 1953. **Wigglesworth, V. B.**—(See Anatomy.)

LEPIDOPTERA—Barnes, D. F. & G. W. Reilly—Hatching of Indian-meal moth eggs in glycerin. [76] 47: 97. **Campbell, I. M.**—Morphological differences between the pupae and the egg clusters of Choristoneura fumiferana (Clem.) and C. pinus Free (Tortricidae). [43] 85: 134–35, ill., 1953. **Cox, C. E.**—Analysis of frequency distribution of adults and larvae of Choristoneura fumiferana (Clem.) and C. pinus Free (Tortricidae). [43] 85: 136–41, ill., 1953. **Cutright, C. R.**—(See Anatomy.) **Diakonoff, A.**—Over de classificate van de zogenaamde Microlepidoptera. [57] 15:

158–60. **Dunk, H. C.**—Observations on the early stages of Apatura iris Linn. [Ent. Record] 66: 135–37. **Ehrlich, P. R.**—Two new subspecies of Erebia epipsodea Butler (Satyridae). [82] 27: 80. **Ferguson, D. C.**—On the identity and status of Eubaphe lamae Freeman (Arctiidae). [43] 85: 371–73, ill., 1953. **Freeman, T. N.**—A note on the occurrence of a European tortricid, Cnephasia virgaureana Treit., in Newfoundland with new synonymy. [43] 85: 291, 1953. —The spruce budworm, Choristoneura fumiferana (Clem.), and an allied new species on pine (Tortricidae). [43] 85: 121–27, ill., 1953. **Good & others**—(See Anatomy.) **Kasy, F.**—Phytometra (Plusia) zosimi Hbn.: über dir ersten stände, biologie und zuchtergebnisse. [Zeit. Wien. Ent. Ges.] 38: 321–33, 1953. **McGaha, Y. J.**—Contribution to the biology of some Lepidoptera which feed on certain aquatic flowering plants. [11] 73: 167–77, ill. **MacKay, M. R.**—The larvae of Choristoneura fumiferana (Clem.) and C. pinus Free (Tortricidae). [43] 85: 128–33, ill., 1953. **Rose, A. H. & J. R. Blais**—A relation between April and May temperatures and spruce budworm larval emergence. [43] 86: 174–77. **Shirôzu, T. & H. Yamamoto**—Morphology of the male genital organ of Argyronome laodice japonica Ménétriès (Nymphalidae). [Sieboldia] 1: 161–68, ill., 1953. **Sibatani, A. & others.**—Male genitalia of Lepidoptera: morphology and nomenclature. I. Divisions of the valvae in Rhopalocera, Phalaenidae (= Noctuidae) and Geometridae. [52] 47: 93–106, ill. **Smith, S. G.**—Reproductive isolation and the integrity of two sympatric species of Choristoneura (Tortricidae). [43] 85: 141–51, 1953. **Sullivan & Wellington**—(See Anatomy.) **Turnock, W. J.**—Some aspects of the life history and ecology of the pitch nodule maker, Petrova albicapitana (Busck) (Olethreutidae). [43] 85: 233–43, ill., 1953. **Wood, G. W. & others**—Life-history studies of Spaelotis clandestina (Harr.) and Polia purpurissata (Grt.) (Phalaenidae) in low-bush blueberry areas in New Brunswick. [43] 86: 169–73. **Yosida, T.**—The relation between the population density and the pattern of distribution of the rice-plant skipper, Parnara guttata Bremer et Gray. Pattern of the spatial distribution of insects. 5th report. (In Japanese with English summary.) [109] 9: 129–34.

DIPTERA—Aczél, M. L.—Orthopyga and Campylopyga, new divisions of Diptera. [52] 47: 75–80. **Aragao, M. B.**—Utilizacão de mosquitos radioativos na availação do raio de vôo. Rev. Brasileira de malariologia e doenças trop. 5 (2): 137–43, 1953. (Review by author [92] 14: 41.) **Arnaud, P. H.**—Hilarella hilarella (Zetterstedt) (Sarcophagidae) parasitic upon a rhaphidophorid (Gryllacrididae). [43] 86: 135–36, ill. **Barnes, H. F.**—(See General.) **Barr, A. R.**—A note on the chaetotaxy of Aedes vexans (Meigen, 1830). [92] 14: 24–25. **Bishop, G. W.**—Life history and habits of a new seed midge, Dasyneura gentneri Pritchard. [76] 47: 141–47. **Bolwig, H.**—(See Anatomy.) **Bonne-Wepster, J. & N. H. Swellengrebel**—The anopheline mosquitoes of the Indo-Australian region. Amsterdam, J. H. de Bussy, 504 pp., 176 figs., 21 distr. maps. (Price and date of publ. not given.) (Review by K. L. Knight [92] 14: 40–1.) **Brennan, J. M., W. A. Rush & A. A. Hubert**—The present status of the Culex tarsalis colony at the Rocky Mountain laboratory. [92] 14: 26. **Burla, H.**—Zur kenntnis der drosophiliden der Elfenbeinküste (Französisch West-Afrika). [120] 61, Fsc. supply., 218 pp., ill. (*k). **Callot, J.**—Le rapport trompe/palpes dans les biotypes du complexe Culex pipiens et leurs hybrides. [17] 29: 131–34. **Coppel, H. C. & M. G. Maw.**—Studies on dipterous parasites of the spruce budworm, Choristoneura fumiferana (Clem.) (Lepidoptera: Tortricidae). III. Ceromasia auricaudata Tns. (Tachinidae). [44] 32: 144–56, ill. **Cristobal, U. L.**—Un parasito cecidogeno del manzano "Dasyneura (Perrisia) mali" Kieffer (Cecidomidae). [Rev. Fac. de Agronomia, Buenos Aires] 29: 201–05, ill., 1953. **Curtis, L. C.**—Observations on mosquitoes at Whitehorse, Yukon Territory. [43] 85: 353–70, ill., 1953. **Farr, T. H.**—Heleidae (Diptera) attacking blister beetles in Massachusetts and Arizona. [36] 49: 88. **Ferguson, F. F. & T. E. McNeel.**—The mosquitoes of New Mexico. [92] 14: 30–1. **Foote, R. H.**—Pictorial keys to the mosquitoes of medical importance. V. French Indochina. [92] 14: 17–20, ill. **Frohne, W. C.**—Biology of an Alaskan mosquito, Culiseta alaskaensis (Ludl.). [52] 47: 9–24. —Mosquito distribution in Alaska with especial reference to a new type of life cycle. [92] 14: 10–13. **Galindo, P., F. S. Blanton & E. L. Peyton.**—A revision of the Uranotaenia of Panama with notes on other American species of the genus. [52] 47: 107–77, ill. (*k). **Gans, M.**—Drosophila. (See Anatomy.) **Gratz, N. G.**—A gynandromorph of Culex pipiens molestus (Forsk.). [92] 14: 22–3, ill. **Guthrie, F. E.**—Life history of Hylemya lupini (Coq.) in Florida. [76] 47: 103–07, ill. **Hardy, G. H.**—The phylogeny of

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COLEOPTERA—Allen, S. E.—Aestivating habits of hydradephaga. [60] 90: 91–2. **Antoine, M.**—Sur l'existence possible d'un organe de toilette mésotibial chez les carabiques. [Revue fran. d'Ent.] 21: 24–5. **Bechyné, J.**—Nachträge zu den katalogen von Blackwelder und Junk-Schenkling der neotropischen echten Chrysomeliden (Phytophaga). [Ent. Arb.] 3: 1–62, ill., 1952 (*). —Über die in Matto Grosso von F. Plaumann gesammelten chrysomeloidea (Phytophaga). [Ent. Arbeit., Mus. G. Frey] 5: 116–33. **Blake, D. H.**—Chrysomelid beetles of the Oedionychus miniatus complex. [56] 56: 139–47, ill. (*). **Breuning, S.**—Revision einiger gattungen aus der gruppe der Saperdini Muls. (Cerambycidae). [Ent. Arb.] 3: 107–213, ill., 1952 (*). **Colas, G.**—Note sur l'éthologie de Lucanus tetraodon subsp. provincialis. [138] 59: 54–6. **Dickason,**

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Anisoptera—Nearctic sp. wanted for exchange, espec. Ophiog., Arigom., Aeschna, Neurocor., Somatoc., Cordulia, Dorocor., Leucor. R. D. Cuyler, Dept. of Entomology, N. C. State College, Raleigh, N. C.

Bembicini and Stizini (Hym., Sphec.) of New World wanted for revis. study. Will return upon request or at end of project. James E. Gillaspy, Dept. of Zoology, Univ. Texas, Austin 12, Texas.

Agapema galbina. Will exchange cocoons of this moth for nature books. E. Frizzell, Route 4, Box 96, San Benito, Texas.

Wanted—Data on exact location of colonies of *Epibembex* (olim *Bembix*) (Hymenoptera), any species, any part of country, for biological studies. Howard E. Evans, Dept. Entomology, Cornell Univ., Ithaca, N. Y.

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Notes on Erebia rossii Curtis (Lepidoptera: Satyridae)[1]

By Paul R. Ehrlich, Lawrence, Kansas

Since the publication of his paper on *Erebia rossii*[2] the author has had the opportunity of examining the specimens of that species in the collection of the Carnegie Museum and of observing it in the field.

Of special interest at Carnegie was a long topotypical (paratype?) series of *E. rossii kuskoquima* Holland. These specimens were, on the whole, not as well marked as the sample examined by the author previously, tending more towards *gabrieli* dos Passos. Of three males from St. Michael, Alaska, in the collection, two were typical *kuskoquima,* the third closer to *gabrieli.* Three males from the mountains between 40 Mile and Mission Creeks, Alaska, were all close to *kuskoquima.* An interesting record was a single battered male, misidentified as *"Erebia mancinus,"* from "Cape Thompson, Arctic O(cean)." This locality is near the northwestern corner of Alaska, approx. 68° N., 166° W.

Unfortunately *E. r. gabrieli* was described when insufficient comparative material was available. It is possible that the name may prove applicable to the populations which exist in the mountains of northern British Columbia and the southern Yukon. It is more likely, however, that when the distributional patterns of *rossii* are well known, *gabrieli* will have to be relegated to the synonomy as merely representing a step in a cline.

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[1] Contribution no. 878 from Department of Entomology, University of Kansas, Lawrence.

[2] Trans. Amer. Ent. Soc., 78: 75–88, 1952.

Erebia rossii presents many interesting problems in distribution and subspeciation; problems which may well be solved now that the Arctic is being rapidly opened to scientific investigation. Such questions as whether the increasing forest in the Mackenzie Delta region will eventually prove to be an effective barrier to *rossii*, whether the Pas and Gillam records of *ornata* indicate that it is at least to some degree adapting itself to life in the taiga, and whether *rossii* populations in British Columbia and the Yukon are examples of relict endemism or of the "island hopping" type of dispersal, may be answered by ecological studies in critical areas.

Perhaps the most easily acceptable (but still extremely hypothetical) explanation of the present distribution of *rossii* would be that it has been dispersing, since the Wisconsinan, either from an Alaskan refugium or from Asia via the Bering Strait. The insect is now established over most of the North American tundra, with the exceptions of the northern part of the Arctic Archipelago (where the climate is probably too rigorous), Arctic Labrador and Quebec, and possibly Coats[3] and Mansel Islands in northern Hudson Bay. The single Labrador record of *rossii*,[4] if authentic, would indicate that it has gained a foothold in northern Labrador, having come over from southern Baffin Island.

During the summer of 1952 the author observed *rossii* in the field at Coral Harbour, Southampton Island, N.W.T. Although, because of pressing duties, it was not possible to make a detailed study of *rossii*, more than 60 individuals were collected and some cursory observations were made. The insects were common in the low, wet, *Carex* meadows between the ridges of high, dry tundra. They were most abundant in the larger meadows, especially in the lush vegetation around good sized lakes, but were also found in small marshy areas in the high tundra itself. The former habitat is shared principally with *Colias hecla* Lef.; the latter, with several species of *Boloria*. It is to be expected that when the life history of *rossii* is completely worked out, its larvae will be found to feed only on a species or a group of species of sedge which is restricted to the large wet meadows. On the warmest, stillest, brightest days, male *rossii* flitted weakly over the meadows in the typical satyrid manner, not rising more than a foot or so above the tundra. The females' flight was even weaker, the individuals rarely rising more than a few inches above the *Carex*. When disturbed, the insects would rise higher into the air and allow themselves to be carried a hundred yards or more by the omnipresent breeze.

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[3] On July 24, 1952 the author collected briefly near Cape Southampton, Coats Island, in the type of locality in which *rossii* was common at Coral Harbour, Southampton Island, 150 miles to the north. A short series of *Colias hecla* Lef. was taken, but no *rossii* were seen.

[4] Williams, R. C., Ent. News, 42: 157, 1931.

Because of its weak flight, prevailing winds cannot be discounted as a possible major guiding agency in the dispersal and subspeciation of *rossii*. It is not inconceivable that in certain areas prevailing winds may even restrict gene flow along a cline to one direction, allowing mutated genes with selective advantage appearing in the "downwind" end of a cline to build up there without spreading to the other end. All of this is, of course, highly theoretical, but should, the author feels, be investigated.

Insects Reared from Lepidoptera[1] (Hym., Dipt.)

By Ralph B. Priddy, University of Pittsburgh, Pittsburgh, Pennsylvania

The following records are based on rearing of material collected by the writer during the spring and summer of 1953 in western Pennsylvania. The writer is greatly indebted to H. K. Clench, C. F. W. Muesebeck, and C. W. Sabrosky for identifying most of the species involved.

On June 27, 1953, at Linesville, of six sphinx larvae feeding on horse gentian, *Triosteum* sp., three were large and nearly mature; the other three were very small but otherwise identical. All were placed in a rearing cage in the laboratory and fed leaves of *Triosteum*. The three large ones spun cocoons on July 1 and emerged, one on July 20 and two on July 21, as adult bumble-bee moths, *Haemorrhagia diffinis diffinis* Boisduval. The three small larvae of the same species proved to be retarded in growth due to parasitism. About July 1 were seen three light yellow, wooly cocoons formed by the parasites—one from each of the three small caterpillars. One of these cocoons was fastened to a *Triosteum* leaf directly under the shrunken body of the host larva. Another was found fastened to a leaf and the third to the net cover of the rearing cage; two of the caterpillars apparently had been able to crawl away after the parasites emerged from them. One was found dead several inches away.

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[1] Contribution No. 10, Pymatuning Laboratory of Field Biology.

The three parasite cocoons were placed in a plaster rearing chamber, and on July 4 and 6 the adults emerged by cutting a circular opening at one end of the cocoon. The one whose cocoon had been found under the body of its host emerged on the earlier date. These parasites were determined by C. F. W. Muesebeck as a species of *Apanteles* closely related to *agricola* Viereck (Hymenoptera, Braconidae), but apparently distinct and seemingly undescribed. Muesebeck notes further (*in litt.*) that this species is presumably the one recorded by Weed (Entomologica Americana, 4(8): 149, 1888) as *Apanteles limenitidis* Riley var., which was reared from the same host, but that it is really a distinct species, not a variety of *limenitidis*. No other records of parasites of *Haemorrhagia diffinis* or its races have been found by the writer.

On April 12, 1953, at South Park, Allegheny County, the writer collected several cases of the bagworm, *Thyridopteryx ephemeraeformis* Haworth, from twigs of chokecherry and kept them in a closed jar in the laboratory at room temperature. From some of these cases, on April 28 and 29, emerged five adult *Pseudogaurax anchora* (Lw.) (Diptera, Chloropidae). A much larger number of empty puparia was found in the cases, suggesting that most of the flies had emerged before the cases were collected. The latter also contained remains of chrysalis skins but no eggs of the bagworm, which should occur there at that season. It cannot be determined from these circumstances whether the larva of *P. anchora* is a predator of the eggs of the bagworm or merely a scavenger. The bagworm cases were carefully examined and no indications of other insects were found in them, nor did any emerge later.

The larva of *P. anchora* has been described by some writers as parasitic or predatory on insect larvae and spider egg cases, and by others as feeding on dry chitinous material, including egg shells, cast larval skins, and chrysalis skins. It has not been recorded previously from the bagworm. Howard (U.S.D.A., Div. Ent., Bull. no. 5, Tech. Ser.: 44–45, 1897) listed *P. anchora* as a scavenger, stating that its larvae and puparia were found in old cocoons of *Hemerocampa leucostigma* S. and A., the larvae of which had been destroyed by *Iseropus coelebs* (Walsh). The *Pseudogaurax* larvae fed upon the dry remains of the caterpillar or were found in the dead pupae. The adults emerged in September, December, May, July, and August. Howard also cites Osten Sacken as finding *P. anchora* feeding gregariously upon the chrysalis of the cecropia moth, and Fernald as rearing it from the cocoons of the gypsy moth, *Porthetria dispar* (L.). Coquillett (U.S.D.A., Div. Ent., Bull. 10, n.s.: 70–72, 1898) reared this species from egg shells of *Corydalus cornutus* L. and noted that the larvae also fed upon larval exuviae and chrysalis skins of *Hemerocampa leucostigma;* in the latter case adult *Pseudogaurax* issued on April 9, 17, and 18, from cocoons collected the previous September. In 1908, Kahl reared a specimen (Carnegie Mus. Acc. No. 3748) which emerged July 27 from the cocoon of a promethea moth taken July 25 at Pittsburgh, Pennsylvania. Auten (Ann. Ent. Soc. Amer., 18: 244, 1925) reared *P. anchora* from nests of the spider *Epeira cornuta.* Kaston and Jenks (Bull. Brooklyn Ent. Soc., 32: 161–165, 1937) reared four specimens from an egg sac of *Argiope aurantia,* the orange garden spider. Breland (Jour. N. Y. Ent. Soc., 48: 259–261, 1940) found it occurring in cecropia cocoons collected at Brooklyn, New York, on November 11, 1937, and March 19 and December 15, 1938. The larvae of *P. anchora* occurred within all parts of the dried tissue of the cecropia. Many were themselves heavily parasitized (up to 10 in one puparium) by a small chalcidoid, *Pleurotropis* sp. Sabrosky (*in litt.*) states that *P. anchora* has also been reared from egg masses of various mantids, but not, to his recollection, from bagworm cases.

Trachys pygmaea (Fab.) the Hollyhock Leaf Miner in New Jersey (Col.: Buprestidae)

By Harry B. Weiss

The genus *Trachys* was first recorded in our fauna by E. Gorton Linsley in 1948. Between June 6 and June 18 of that year Dr. Linsley collected a series of *Trachys pygmaea* (Fab.) on hollyhock leaves in Rutherford, New Jersey, and recorded his findings about this species, which is indigenous to Europe, Asia Minor and North Africa, in the Journal of the New York Entomological Society, Vol. LVI, December, 1948, p. 251. My interest in this species was revived in March, 1954, when C. A. Frost of Framingham, Mass., advised me that he had received specimens from R. H. Jackson, labeled "Montclair, N. J., July, 1953," together with information that hollyhock leaves had been damaged by larval mines and adult feeding.

Mr. L. Donald DeBlois, who has charge of the economic insect survey work in New Jersey, was asked to determine the geographical distribution of the species in the State of New Jersey, and his crew of inspectors examined hollyhock plants at 105 locations, mostly in gardens, between June 23 and June 30, 1954. They found the species at 19 places, as follows: Bergen County—Fair Lawn, Ridgewood, Hackensack, Lyndhurst, East Rutherford; Passaic County—Hawthorne, Paterson, Passaic, Clifton; Union County—Cranford; Essex County—Bloomfield, Glen Ridge, Montclair, Verona, Orange, Newark, Nutley, Belleville, Irvington. Inspections made in Hudson, Middlesex, Monmouth, Morris, Somerset, Mercer, Burlington and Camden counties were negative. The species was found to be generally distributed in an area of about 270 square miles extending from Ridgewood in the north to Cranford in the south and from Hackensack in the east to Verona in the west. At nine of the 19 localities the species was fairly abundant, either as adults or as larvae in mines.

The species apparently overwinters in the adult stage, the beetles appearing in the latter part of May. Eggs are deposited on the uppersides of hollyhock leaves (*Althæa rosea*), and each is covered with a shining, blackish, secretion which hardens into a flat circular or oval mass about 0.8 mm. long and 0.6 mm. wide with a slightly convex upper surface. Upon hatching, the larva starts mining at once and the dark secretion covering the egg remains on the leaf at the edge of the mine long after it is empty. At first the mine is circular but as the larva develops the mine becomes irregularly oval or blotch-like. Completed mines containing full grown larvae varied in size from 15 to 20 mm. long by 5 to 14 mm. wide.

During the last week of June, adults, pupae, and partly and full grown larvae were apparent. Some leaves contained from one to 25 mines varying in size from 3 mm. in diameter to completed mines containing pupae. Each mine is inhabited by a single larva and pupation occurs within the mine. In severe infestations the mines coalesce, involving most of the leaf; the entire mesophyll of the leaf is consumed leaving only the transparent upper and lower epidermis.

The full grown, legless, whitish larva, 5 mm. in length, is typically buprestid in shape, with retracted head, deeply lobed segments, with the abdominal ones becoming narrower posteriorly. The dorsal surface of the first thoracic segment is marked by a large, dark, subrectangular area. The dorsum of the second thoracic segment carries a smaller, similar dark area. The third thoracic and the first six abdominal segments are each marked dorsally with a dark, circular dot resting upon a dark, larger, oval area. The dark markings on the dorsal surfaces of the remaining abdominal segments are reductions and modifications of the others. The markings on the ventral body segments are similar in size and shape to those on the dorsal side. The pupa is about 4 mm. long and from a maximum width of 2 mm. it tapers anteriorly and posteriorly to a width of 1 mm. The larval markings show quite plainly through the transparent upper and lower leaf surfaces. The elytra of the adult are bright green or blue green, the head and pronotum brilliant cupreous, the ventral surface black with a cupreous lustre. The adults resemble Pachyschelus in shape and size.

Professor E. Martin Hering in his "Biology of the Leaf Miners" (Dr. W. Junk, 's-Gravenhage, Netherlands, 1951) illustrates the adult, larva and blotch mine of a related species *Trachys minuta* L., that mines the leaves of *Salix*, *Ulmus*, *Tilia* and occurs on Rosaceae and Amentiferae. Another foreign species *Trachys troglodytes* Gyllh., mines the Dipsaceae: *Succisa*, *Knautia* and *Scabiosa*.

It is not known how long *Trachys pygmaea* (Fab.) had been in this country before its discovery by Dr. Linsley in Rutherford, N. J., in 1948. It is not unexpected to find introduced species in the Rutherford area of New Jersey, considering the enormous amounts of nursery stock that were brought into that area from foreign countries many years ago by several large nurseries. In view of the great popularity of hollyhock (*Althæa rosea*) as a garden plant it is expected that in years to come *T. pygmaea* (Fab.) will be as widely distributed as its host. It may already occur in states adjoining New Jersey.

The Nomenclatural Status of the Fire-Brat

Last year I[1] drew attention to the fact that the fire-brat (Thysanura, Lepismatidae) had originally been described under the name *Lepismodes inquilinus* Newman and that this should therefore take precedence over *Thermobia domestica* (Pack.), the name at that time in common usage. However, in view of the frequency with which the latter name has appeared in the literature over the past fifty years and on account of the inadequacy of Newman's original description, application has been made to the International Commission on Zoological Nomenclature to place the name *Thermobia domestica* on the Official List of Specific names in Zoology, the names *Lepismodes inquilinus* and *Thermobia furnorum* (Rovelli) on the Official Index of Rejected and Invalid Specific Names in Zoology and the name *Lepismodes* on the Official Index of Rejected Generic Names. It is suggested that whilst this matter is receiving the consideration of the Commission the name *Thermobia domestica* should be used.—M. J. DELANY, Univ. of Florida, Gainesville.

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[1] DELANY, M. J. 1953. A revision of the British Thysanura. Ent. mon. Mag., 89: 144–145.

Notes and News in Entomology

Under this heading we present, from time to time, notes, news, and comments. Contributions from readers are earnestly solicited and will be acknowledged when used.

Disinsectization. "Disinsectization" and "disinsectize" have appeared recently upon the entomological horizon, blossoming forth in printed administrative instructions issued by the Plant Pest Control Branch of the Agricultural Research Service of the United States Department of Agriculture. These words seem strange to the eye and sound strange to the ear but it is not strange to find them coming from Washington.

Everyone, of course, has a perfect right to manufacture transitive and intransitive verbs by adding the suffix "ize" and to form nouns from verbs by adding the compound suffix "ization," and also to use the prefix "dis" to convey the meaning of undoing or reversal.

In order for something to be disinsectized it first has to be insectized, and in order for it to be disinsectized properly, there has to be a method of disinsectization. If one's property is infested by ants, it is then said to be antized. To correct this situation it should be disantized by a method of disantization. Extending the principle to ticks, we have tickize, distickize and distickization. For roaches we can have roachize, disroachize and disroachization, for grubs, grubize, disgrubize and disgrubization. The possibilities are endless.

Some of the monstrosities made by tinkering with suffixes and prefixes are not generally adopted and have a short life, but others remain in use for years. Most new verbs seem to be made by advertising men and newspaper writers. Although the past never stays put and one expects vocabularies to be constantly extended, it is hoped that such irritating words as disinsectization and others of like ilk are not the beginnings of entomological gobbledygook which we can very well do without.—HARRY B. WEISS.

Current Entomological Literature

Compiled by VENIA T. PHILLIPS, Librarian

Academy of Natural Sciences of Philadelphia

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania pertaining to entomology, including all arthropods except Crustacea. Coverage will be world-wide as regards major contributions to systematics as well as for all papers on morphology, physiology, embryology, etc. In addition, for species from the Americas and the Pacific (Nearctic, Neotropical and Polynesian regions) all minor contributions to taxonomy, distribution, etc., will also be recorded.

This list gives references of the year 1954 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

GENERAL—Angus, T. A.—Use of methyl cellulose in laboratory tests of bacterial pathogens of insects. [43] 86: 206. **Born, D. E.**—Mold control in fly rearing media. [76] 47: 367. **Burris, W. E.**—The bottom fauna development of a newly constructed pond in Central Oklahoma. [Okla. Acad. Sci., Proc.] 33: 129–36, ill., 1952 (publ. in 1954). **Burton, G. J.**—Rapid permanent mounts of mosquito larvae with creosote-alcohol, phenol-alcohol, lactophenol and polyvinyl alcohol. [92] 14: 72–75. **Callan, E. McC.**—Insects and a mite associated with Gerbera Jamesoni Bolus in Trinidad. [60] 90: 112. **Carter, W.**—The insect and the plant disease. [76] 47: 210–15. **Carthy, J. D.**—The rôle of vision in route-finding in insects. [Advance. of Sci.] 11: 75–78. **Crisp, G. & L. Lloyd.**—The community of insects in a patch of woodland mud. [126] 105: 269–314, ill. **Glen, R.**—Factors that affect insect abundance. [76] 47: 398–405. **Horen, W. P.**—Modified flag for tick collecting. [111] 30: p. 112. **Kerr, R. W.**—A method for the topical application of small measured doses of insecticide solutions to individual insects. [40] 45: 317–21, ill. **Kitzmiller, J. B. & D. W. Micks**—Techniques for rearing Culex mosquitoes. [12] 52: 253–56. **Langston, R. L.**—Technique for mass rearing of Harrisina brillians (Zygaenidae). [85] 8: 11–12. **Long, D. B.**—Some problems of polymorphism in insects. [124] 27: 99–110, 1952. **Michener, C. D.**—Problems in the development of social behavior and communication among insects. [81] 56: 1–15, 1953.

Popham, E. J.—A new and simple method of demonstrating the physical gill of aquatic insects. [124] 29: 51–54, ill. **Smith, R. F.**—The importance of the microenvironment in insect ecology. [76] 47: 205–10. **Stuardo O., C.**—Los atlas de la historia física y política de Chile. [Rev. Chilena Ent.] 3: 152–78, 1953 (publ. in 1954).

BIOGRAPHIES, OBITUARIES—Börner, Carl J. B., 1880–1953.—Obituary by C. L. Remington. [85] 8: 30. **Bowles, Edward Augustus, 1865–1954.**—Obituary. [Ent. Rec.] 66: 178–79. **Britten, Harry, 1870–1954.**—Obituary, with portrait, by W. D. H. [142] 4: 225–28. **Carpenter, Goeffrey Douglas Hale, 1882–1953.**—Obituary, with portrait, by C. L. Remington. [85] 8: 31–43. **Casselberry, Raymond C., 1900–1954.**—Obituary by C. L. Remington. [85] 8: 30. **Fattig, Perry Wilbur, 1881–1953.**—Obituary, with portrait, by H. O. Lund. [76] 47: p. 352. **Gutiérrez, Ramón, 1917–1953.**—Obituary, with portrait, by G. O. Fauré. [Rev. Chilena Ent.] 3: 183–85, 1953 (publ. in 1954). **Kilman, Leroy N., 1874–1954.**—Obituary by C. L. Remington. [85] 8: 30. **Lawson, Paul Bowen, 1888–1954.**—Obituary by H. B. Hungerford. [82] 27: 81–83, port. **McElhose, Arthur L., 1887–1954.**—Obituary by C. L. Remington. [85] 8: 30. **Rogers, William Prescott, 1887–1953.**—Obituary, with portrait, by E. D. Learned. [85] 8: 44–45. **Sperry, John L., 1894–1954.**—Obituary by C. L. Remington. [85] 8: 30. **Srivastava, Kailash Nath, 1902–1953.**—Portrait. [Ind. Jour. Ent.] 15: 390, 1953. **Vitale, Francesco, 1861–1953.**—Cenno biografico e bibliografia del geom. Francesco Vitale, C. Conci. [Mem. Soc. Ent. Ital.] 32: 60–63, 1953. **Vogelsanger, Theodor, 1880–1953.**—Bio-bibliography with portrait, by Georg Kummer. [Actes, Soc. Helvetique Sci. Nat.] 133: 355–60, 1953.

ANATOMY, PHYSIOLOGY, MEDICAL—Aboul-Nasr, A.—The effect of carbon-dioxide upon the wing-beat frequency of Drosophila virilis Sturtevant (1916). [139] 38: 1–19, ill. —The effect of carbon-tetrachloride upon the wing-beat frequency of Drosophila virilis Sturtevant (1916). [139] 38: 19–31, ill. **Abul-Nasr, S.**—The formation of polyhedra in the gut epithelial cells of virus-infected insects. [139] 38: 383–95, ill. —Origin and development of the reproductive system in insects. [139] 38: 33–46, ill. **Acree, F., Jr.**—The chromatography of gyptol and gyptol ester. [76] 47: 321–26, ill. **Ammann, H.**—Die postembryonale entwicklung der weiblichen geschlectsorgane in der raupe von Solenobia triquetrella F. R. (Lep.) mit ergänzenden bemerkungen über die entwicklung des männlichen geschlechtsapparates. [157] 73: 337–94. **Asahina, E., K. Aoki & J. Shinozaki**—The freezing process of frost-hardy caterpillars. [40] 45: 329–40, ill. **Bodine, J. H. & others**—Catalase during embryonic development (Melanoplus differentialis). [113] 27: 267–72, ill. **Brangi, G. P. & M. Pavan**—Sulle proprietá antibatteriche del veleno di Apis mellifica L. (Apidae). [Insectes Sociaux] 1: 209–17, ill. **Burnett, T.**—Influences of natural temperatures and controlled host densities on oviposition of an insect parasite. [113] 27: 239–48, ill. **Chang, P. & G. Fraenkel**—Histopathology of vitamin B_T (Carnitine) deficiency in larvae of meal worm, Tenebrio molitor L. [113] 27: 259–67, ill. **Cloudsley-Thompson, J. L.**—Studies in diurnal rhythms. IV. Photoperiodism and geotaxis in Tenebrio molitor L. (Tenebrionidae). [124] 28: 117–32, ill., 1953. **Dalmat, H. T.**—Ecology of simuliid vectors of Onchocerciasis in Guatemala. [12] 52: 175–96, ill. **Darchen, R.**—Quelques régulations sociales dans la construction chez les abeilles. [Insectes Sociaux] 1: 219–28, ill. **Frisch, K. von**—Die fähigkeit der bienen, die sonne durch die wolken wahrzunehmen. [Sitz. Math.-Nat. Kl., Bayer. Akad. Wiss. Munchen] 1953: 197–99. —Himmel und erde in Konkurrenz bei der orientierung der bienen. [100] 41: 245–53. **Frost, S. W.**—Response of insects to black and white light. [76] 47: 275–78. **Fuller, H. S.**—Experimental epidemiology in relation to arthropod-borne disease. [76] 47: 420–29. **Fuller, R. A., P. W. Riegert & J. W. T. Spinks**—Persistence of radioactivity in grasshoppers (Acrididae) tagges with phosphorus-32. [43] 86: 201–03. **Goetze, G.**—Futtersaftsekretion und instinktverfassung bei der honigbiene. [Insectes Sociaux] 1: 131–38, ill. **Gösswald, K. & K. Bier**—Untersuchungen zur kastendetermination in der gattung Formica. 3. Die kastendetermination von Formica rufa rufo-pratensis minor Gössw. [Insectes Sociaux] 1: 229–46, ill. **Green, G. W.**—Humidity reactions and water balance of larvae of Neodiprion americanus banksianae Roh. and L. lecontei (Fitch) (Diprionidae). [43] 86: 261–74, ill. —Some laboratory investigations of the light reactions of the larvae of Neodiprion americanus banksianae Roh. and N. lecontei (Fitch) (Diprionidae). [43] 86: 207–22, ill. **Haldane, J. B. S. & H. Spurway**—A statistical analysis of communication in "Apis mellifera" and a comparison with communication in other animals. [Insectes Sociaux] 1: 247–83, ill. **Kerr,**

R. W.—Variation with age in the susceptibility to DDT and the respiration rate of male and female Drosophila melanogaster Mg. [40] 45: 323–28. **King, J. C.**—The genetics of resistance to DDT in Drosophila melanogaster. [76] 47: 387–93, ill. **Kloft, W.**—Ueber die einwirklung von begiftungen mit neuzeitlichen insektiziden auf soziale verhaltensweisen von ameisen. [Insectes Sociaux] 1: 139–48. **Lower, H. F.**—A morphological interpretation of postembryonic insect development. [Arch. zool. Exp. Gen. Notes et Revue] 91: 51–72. **Maruyama, K.**—The activity change of actomyosin adenosinetriphosphatase during insect metamorphosis. [Bioch. Biophys. Acta] 14: 284–85. **Muller, J.**—The reaction of Lepidoptera and their larvae in hot weather. [85] 8: 29. **Newton, C. J.**—Effects of starvation on composition of Japanese beetle larvae (Popillia japonica Newman). [113] 27: 248–58, ill. **Ohnishi, E.**—Tyrosinase in Drosophila virilis. [Ann. Zool. Jap.] 27: 33–39. **Packchanian, A.**—Altitude tolerance of normal and infected insects. [76] 47: 230–38, ill. **Park, T.**—Experimental studies of interspecies competition. II. Temperature, humidity, and competition in two species of Tribolium. [113] 27: 177–238, ill. **Quarterman, K. D., J. W. Kilpatrick, & W. Mathis**—Fly dispersal in a rural area near Savannah, Georgia. [76] 47: 413–19, ill. **Roan, C. C. & S. Maeda**—The cholinesterase systems of three species of fruit flies and the effects of certain insecticidal compounds on these enzymes. [76] 47: 507–14, ill. **Rodriquez, J. G.**—Radiophosphorus in metabolism studies in the two-spotted spider mite. [76] 47: 514–17, ill. **Rozeboom, L. E.**—Hybridization among mosquitoes and its possible relation to the problem of insecticide resistance. [76] 47: 383–87. **Sailer, R. I.**—Interspecific hybridization among insects with a report on crossbreeding experiments with stink bugs. [76] 47: 377–83, ill. **Sang, J. H. & J. M. McDonald**—Production of phenocopies in Drosophila using salts, particularly sodium metaborate. [J. Genetics] 52: 392–412. **Taylor, J. S.** —Notes on further parthenogenetic generations of a species of Mesocelis (Lasiocampidae) from the Eastern Karoo [124] 29: 71–75. **Thorsteinson, A. J.**—The chemical sense in phytophagous insects. [Redia, 2d ser.] 38: 369–74. **Vavala, D. A.**—A comparative study of the respiration of normal and tumor strains of Drosophila melanogaster. [148] 6: 194–200. **Wafa, A. K.**—Analysis of the influence of single weather factors on flighting and on changes in weight of scale-hives of honeybees at Rothamsted. [139]

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ARACHNIDA AND MYRIOPODA—Cloudsley-Thompson, J. L.—Problems of dispersal in some terrestrial arthropods. [Advance. of Sci.] 11: 73–75. **Crome, W.**—Beschreibung, morphologie, und lebensweise der Eucta kaestneri sp. n. (Araneae, Tetragn.). [158] 82: 425–52. **Daniel, M. & J. Ludvík**—Oberflächenstrukturen des scutums von Ixodes ricinus. [Zeit. für Parasitenkunde] 16: 241–52, ill. **Donoso B., R.**—Ixodoidea de Chile. [Rev. Chilena Ent.] 3: 132–34, 1953 (publ. in 1954). **Furman, D. P.**—A new species of Androlaelaps from Perognathus in southern California (Acarina: Laelaptidae). [111] 30: 119–24, ill. **Gregson, J. D.**—The male of Ixodes signatus Birula (Ixodidae). [43] 86: 275–77, ill. **Hoffman, R. L.**—A new milliped of the genus Colactis from Mexico (Chordeumida, Lysiopetalidae). [13] no. 1673, 4 pp., ill. **Hoogstraal, H.**—A preliminary, annotated list of ticks (Ixodoidea) of the Anglo-Egyptian Sudan. [80] 40: 304–10, ill. **Horen, W. P.**—(See General.) **Kardos, E. H.**—Biological and systematic studies of the subgenus Neotrombicula (genus Trombicula) in the central United States (Acarina, Trombiculidae). [83] 36: 69–123, ill. **Lawrence, R. F.**—Some Solifugae in the collection of the British Museum (Natural History). [156] 111–24, ill. (*S). **McGregor, E. A.**—Two new mites in the genus Typhlodromus (Phytoseiidae). [145] 53: 89–92, ill. **Morishita, F. S.**—Biology and control of Brevipalpus inornatus (Banks). [76] 47: 449–56, ill. **Nesbitt, H. H. J.**—A new mite, Zwickia gibsoni n. sp., Fam. Anoetidae, from the pitchers of Sarracenia purpurea L. [43] 86: 193–97, ill. **Newcomer, E. J.**—Identity of Tetranychus pacificus and mcdanieli. [76] 47: 460–62. **Painter, R. H. & J. Schesser**—Western wheat grass, an over-summering host of Aceria tulipae (K.), vector of streak-mosaic of wheat. [82] 27: 118–19, ill. **Penner, L. R., T. Francis, Jr. & G. C. Brown**—Some observations on the ecology of a North American chigger Trombicula (Eutrombicula) lipovskyana Wolfenbarger, 1952, in a Tennessee community. [82] 27: 113–17. **Remy, P. A.**—Quelques pauropodes du

Michigan (Myriapoda). [Rev. Française d'Ent.] 21: 125–31, ill. **Roth, V. D.**—Review of the spider subgenus Barronopsis (Agelenidae). [13] no. 1678, 7 pp., ill. (*). **Scorza, J. V.**—Dos especies nuevas de Alacranes de Venezuela. [Nov. Cient., Mus. Hist. Nat. La Salle, ser. zool.] no. 12, 11 pp., ill. **Viets, K.**—Einige neue wassermilben (Hydrachnellae, Acari) aus San Salvador. [Veröff. Überseemus. Bremen, ser. A] 2: 149–60, ill., 1953. —Süsswassermilben (Hydrachnellae, Acari) aus Südamerika. [Arch. für Hydrob.] 49: 1–224, ill. (*). **Williams, A. J.**—Biology of the common red spider. [82] 27: 97–99. **Woolley, T. A.**—A new species of box-mite from Colorado (Oribatei: Phthiracaridae). [12] 52: 197–200, ill.

SMALLER ORDERS—Carpenter, F. M.—The Baltic amber Mecoptera. [115] 61: 31–40, ill. **Chandler, H. P.**—Four new species of dobsonflies from California (Megaloptera: Corydalidae). [111] 30: 105–11, ill. **Clément, G.**—Contribution à l'étude de la biologie d' "Anacanthothermes ochraceus" Burm. [Insectes Sociaux] 1: 194–98. **Drummond, F. H.**—The eversible vesicles of Campodea (Thysanura). [124] 28: 145–48, ill., 1953. **Dunn, J. A.**—Micromus variegatus Fabricius (Neuroptera) as a predator of the pea aphid. [124] 29: 76–80, ill. **Eastop, V. F.**—An apparently undescribed structure in the Dermaptera. [124] 28: 45–46, ill., 1953. **Ellis, L. L., Jr.**—A tentative key to the mammalian ectoparasites of the Wichita Mountains Wildlife Refuge. [Okla. Acad. Sci., Proc.] 33: 111–15, 1952 (publ. in 1954). **Fairchild, H. E. & P. A. Dahm**—A taxonomic study of adult chicken lice found in the United States. [82] 27: 106–11, ill. **Giles, E. T.**—The growth of the head capsule and antennae of Anisolabis littorea (White) (Dermaptera: Labiduridae). [124] 27: 91–98, ill., 1952. **Hicken, N. E.**—Larvae of the British Trichoptera. 34–42. [124] 27: 89–90, 1952; 28: 36–40, 74–76, 111–16, 163–65, 1953; 29: 55–61, ill. **Hopkins, G. H. E. & G. Timmermann**—A revision of the species of Quadraceps (Mallophaga) parasitic on Tringinae. [126] 105: 131–50, ill. (*S). **Hynes, H. B. N.**—The nymph of Neoperla spio (Newman) (Plecoptera). [124] 28: 93–99, ill., 1953. **Jones, T.**—The external morphology of Chirothrips hematus (Trybom) (Thysanoptera). [126] 105: 163–87, ill. **Philipson, G. N.**—The larva and pupa of Hydropsyche instabilis Curtis (Trichoptera: Hydropsychidae). [124] 28: 17–23, ill., 1953. —The larva and pupa of Wormaldia subnigra McLachlan (Trichoptera: Philopotamidae). [124] 28: 57–

62, ill., 1953. —A method of rearing Trichopterous larvae collected from swift-flowing waters. [124] 28: 15–16, ill., 1953. **Racenis, J.**—Descubrimiento de Orthemis sibylla Ris (Odonata: Libellulidae) en Venezuela. [Nov. Cient., Mus. Hist. Nat. La Salle, ser. zool.] no. 13, 4 pp., ill. **Schmid, F.** —Contribution à l'étude de la sousfamille des Apataniinae (Trichoptera, Limnophilidae), II. [149] 97: 1–74, ill. (*). **Vargas, L.**—Clave para identificar las familias, subfamilias y géneros de pulgas de México (Siphonaptera). [Rev. Inst. Salubr. Enferm. Trop. Méx.] 13: 315–20, 1953.

ORTHOPTERA—Agarwala, S. B. D.—A comparative study of the ovipositor in the Acrididae.—II. [Ind. Jour. Ent.] 15: 299–318, ill., 1953. **Cameron, E.**—Some new and improved methods for demonstrating the cockroach. [124] 28: 41–44, ill., 1953. **Ewer, D. W.**—On the nymphal musculature of the pterothorax of certain Acrididae. [Ann. Natal Mus.] 13: 79–89, ill. **Grayson, J. McD.**—Differences between a resistant and non-resistant strain of the German cockroach. [76] 47: 253–56. **Riegert, P. W., R. A. Fuller & L. G. Putnam**—Studies on dispersal of grasshoppers tagged with phosphorus. [43] 86: 223–32, ill. **Scharff, D. K.**—The role of food plants and weather in the ecology of Melanoplus mexicanus mexicanus (Sauss.). [76] 47: 485–89. **Stevenson, J. P.**—An epizootic among laboratory stocks of the desert locust, Schistocerca gregaria Forsk. [98] 174: 222. **Thomas, J. G.**—A comparison of the flight muscles of Acrididae with different wing development. [124] 28: 47–56, ill., 1953. —The post-embryonic development of the flight muscles of Lamarckiana sp. and a brief comparison of these with those of Saussurea stuhlmannia (Karsch) and Tanita dispar (Miller). [124] 29: 23–31, ill.

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LEPIDOPTERA—Alberti, B.—Cenno conclusivo sulla nomenclatura di Procris globulariae Hbn. (Zagaenidae). [Redia, 2d ser.] 38: 225–29. **Ammann, H.**—(See Anatomy.) **Bagwell-Purefoy, E.**—An unpublished account of experiments carried out at East Farleigh, Kent, in 1915 and subsequent years on the life history of Maculinea arion, the large blue butterfly. [124] 28: 160–62, 1953. **Baird, R. B.**—A species of Cephalosporium (Moniliaceae) causing a fungous disease in larvae of the European corn borer, Pyrausta nubilalis (Hbn.). [43] 86: 237–40, ill. **Barber, H. G.**—The family Lygaeidae of the island of Cuba and the Isle of Pine. Part II. [Soc. Cubana Hist. Nat., Mem.] 22: 335–53, ill. (*). **Beebe, R.**—A new North American record and a second rarity. [85] 8: 26. **Bourgogne, J.**—Un Rhopalocère américain observé sur la côte bretonne. [119] 14: 138. **Brown, S. C. S.**—Loxostege palealis (Schiff.) (Pyraustidae) carrying the pollinia of an orchid. [60] 90: 119. **Caruel, M.**—Révision des formes et aberrations du catalogue des rhopalocères de France. [119] 14: 147–53. **Chermock, O. D.**—New records of Rhopalocera from southeastern Arizona. [85] 8: 25. **Conway, P. J.**—On butterflies and crab spiders. [85] 8: 28. **Coppel, H. C. & M. G. Maw**—(See Diptera.) **Diakonoff, A.**—Microlepidoptera of New Guinea. Results of the Third Archbold Expedition (American-Netherlands Indian Expedition 1938–1939). Part III. [Verhand. K. Neder. Akad. Weten. Afd. Natuur.] 49: no. 4, 164 pp., ill. (*k). **Ely, R.**—Concerning Hemileuca maia in Wisconsin. [85] 8: 29. **Etcheverry C., M.**—Identificaciones lepidopterológicas. [Rev. Chilena Ent.] 3: 126–31, 1953 (publ. in 1954). **Evans, W. H.**—Flight habits of Anthocaris. [85] 8: 10. **Garner, W. V.**—A case of reverse predation in the Carabidae. [111] 30: p. 152. **Gillham, N. W.**—The taxonomic identity of Melitaea (Athaliaeformia) mayi Gunder (Nymphalidae). [115] 61: 16–19, ill. **Hayward, K. J.**—Migration of butterflies in Argentina during the spring and summer of 1951–52. [124] 28: 63–73, 1953. **Herrera G., J.**—Lepidopteros nuevos para Chile. Pieridae. [Rev. Chilena Ent.] 3: 140–47, ill., 1953 (publ. in 1954). **Jablonski, R. J.**—Collecting America's most beautiful hairstreak (Hypaurotis chrysalus). [85] 8: 28. **Knowlton, G. F.**—Migrations of Vanessa cardui, the painted lady butterfly, through Utah. [85] 8: 17–22. **Lambremont, E. N.**—The butterflies and skippers of Louisiana. [Tulane Studies Zool.] 1: 127–64. **Langston, R. L.**—(See General.) **Latham, R.**—The foodplant of Legna perditalis. [85] 8: 27. **Lesse, H. de**—Discussion de certains caractères morphologiques d'Arethusana arethusa Schiff. et des formes boabdil Rambur et dentata Stgr. [119] 14: 140–42, ill. **Lorkovic, Z.**—L'accouplement artificiel chez les lépidoptères et son application dans les recherches sur la fonction de l'appareil génital des insectes. [119] 14: 138–39. **McDunnough, J. H.**—The species of the genus Hydriomena occurring in America north of Mexico (Geometridae, Larentiinae). [14] 104: 237–358, ill. (*). **MacKay, M. R.**—The egg and larva of Coryphista meadi atlantica Munroe (Geometridae). [43] 86: 284–88, ill. (*). **Mattoni, R. H. T.**—Taxonomy and distribution in the genus Philotes. [85] 8: 8. (Abstract.) **Morris, R. F.**—A sequential sampling technique for spruce budworm egg surveys. [44] 32: 302–13, ill. **& C. A. Miller**—The development of life tables for the spruce budworm. [44] 32: 283–301, ill. **Muller, J.**—(See Anatomy.) **Munroe, E.**—The eastern North American subspecies of the barberry geometrid. [43] 86: 282–83, ill. (*). **Remington, C. L.**—Frank Morton Jones collection presented to Yale University. [85] 8: 47. **Rindge, F. H.**—A revision of the genus Tornos Morrison (Geometridae). [14] 104: 177–236, ill. (*). —Smith and Hulst collections obtained by American Museum of Natural History. [85] 8: 46. **Sevastopulo, D. G.**—Trap nets for Rhopalocera. [85] 8: 26. **Sperry, J. L.**—Neotropical Geometridae apparently undescribed. [145] 53: 69–74. **Taylor, E. A.**—Parasitization of the salt-marsh caterpillar in Arizona. [76] 47: 525–30. **Tilden, J. W.**—Microlepidoptera associated with Baccharis pilularis. III. Aegeriidae, Coleophoridae. [153] 12: 43–52. **Tinkham, E. R.**—The biology and description of a new giant skipper from Arizona. [145] 53: 75–87, ill. **Toll, S.**—Studien über die genitalien einiger Coleophoriden. XII. [Mem. Soc. Ent. Ital.] 32: 99–107, ill., 1953 (*). **Treat, A. E.**—Acentropus niveus in Massachusetts, remote from water. [85] 8: 23–25. **Walley, G. S.**—Notes on Acrobasis rubrifasciella Pack. (Phycitidae), with a list of its parasites. [43] 86: 255–60. **Zocchi, R.**—Note biologiche sulla Theresimima ampelophaga Bayle-Barelle. [Redia, 2d ser.] 38: 238–46, ill.

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Reviews

AN INTRODUCTION TO THE STUDY OF INSECTS by Donald J. Borror and Dwight M. DeLong (The Ohio State University). Pp. ix + 1030; over 600 illustrations. Rhinehart and Company, New York, 1954. $9.00.

This book provides keys to all the insect families in the United States, with the exception of some of the beetles. Numerous line drawings illustrate the characters used in the keys and there are many habitus pictures as well, and a complete glossary. For each family there is a short paragraph, usually of a few lines to half a page or more, that tells something of the habits of the insects and of their importance.

In size and general make-up this book resembles Essig's "College Entomology" (Macmillan, 1942). It, too, has only a short chapter of 52 pages on anatomy and metamorphosis and then concerns itself with the classification into orders and families. In addition, and not found in Professor Essig's book, the concluding 184 pages deal with: Relations to man, control, collecting and preserving, activities and projects (electric questioners, cages, rearing, photography), and a list of experiment stations and entomological societies. Continuing the comparison, we may say that the Essig book offered more information on the various insect groups, using more text material (about 20% more per page by closer spacing of the lines) and giving less space to illustrations. In the present volume much space is wasted by illustrations that are frequently excessively large in relation to the detail they are to show, and by the way they are arranged. And if we draw our "Comstock" into the comparison we may then see how much entomology can really be packed into approximately 1000 pages!

These comparisons are intended to help describe the book, not as a criticism. It is, evidently, a practical book for actual use in learning the distinguishing features of the orders and families by means of the keys and a study of the figures, rather than merely a reference book. Especially gratifying is the fact that *all* American families are said to be included in the keys, with the exception of some of the rare or minute families of beetles that are listed but marked as not keyed. However, there is an orthopteran family (Eumastacidae) that has escaped mention entirely. The fact that this book avoids giving too much information not pertinent to its primary aim is in keeping with the times, and the so prevalent student resistance to the more fundamental or theoretical aspects of a subject.

The reviewer would not favor a beginning course in entomology based mainly upon the identification of insects. In chemistry, one begins with "general chemistry," not with qualitative analysis; in zoology with a course in "general zoology." Why not, in fairness to our science and to the student, begin entomology with a broad, general course?—R. G. SCHMIEDER.

BRUES, CHARLES T., AXEL L. MELANDER and FRANK M. CARPENTER. 1954. Classification of Insects, Keys to the Living and Extinct Families of Insects, and to the Living Families of other Terrestrial Arthropods. Bull. Mus. Comp. Zool. Harvard College 108: 1–917. $9.00.

The present edition of this widely known and useful work differs from the preceding one only slightly, chiefly in being longer (917 vs. 672 pages) and in containing a section devoted to fossil insects. The format has not changed at all and the illustrations (line drawings of key characters) are the same as in the 1932 edition, even bearing the same numbers. However, there are added to these about 100 figures in the keys to the extinct orders and families.

Part I contains keys to the families of 27 orders of insects—seven less than previously dealt with, the difference being accounted for by a reduction in rank to subordinal status for the Grylloblatodea, Phasmatodea, Mantodea, Diploglossata, Homoptera, Megaloptera and Raphidiodea. A key to the classes of living Arthropods lists twelve, an increase of one, due to the addition of the tongue worms (Pentastomida), here elevated from ordinal rank. Part II, with keys to the families of terrestrial Arthropods other than insects has changed so little that no comment is necessary.

The extinct families of insects are treated in the third, and new, part of the work which also provides a key to the extinct orders (44 listed, of which ten are considered valid). These keys are not intended for use in classifying insect fossils, but merely to indicate taxonomic differences of the forms involved and to illustrate current classification. Included in this section is a chronological list of the extinct orders, a table of the geologic periods and a conspectus of the extinct families. Each order and family has its range in time indicated in the key.

The glossary of technical terms, index to genera and higher categories, and one to common names, are retained. Following each key is a list of selected references of monographic or equivalent scope, which remains one of the most useful parts of the work. In this edition these total about 8000 entries as opposed to the 4000 and some odd previously noted.

Some criticism might be leveled by specialists disagreeing with the systematic treatment of their own groups (as, why are the Eumastacids accorded only a subfamilial rank when the Tetrigids are treated as a family? [Orthoptera]), but on the whole the treatment is logical and conservative. Less logical is the presentation of a key to the larvae of the Hymenopterous insects in which one half of the forms are separated by morphological characters while the others are split off by ethological or ecological ones, when in the latter case perfectly distinct morphological characters are known (from the works of Grandi, Richter, Reid, Soika, G. C. Wheeler, etc.). Some important omissions may be noted in the references, e.g., Muma, M. H. 1951. The Arachnid order Solpugida in the United States. Bull. Amer. Mus. Nat. Hist., 97 (2): 35–141, from the references listed behind the key to the families of that order.

As a basic reference for students of systematic entomology the work remains unsurpassed.—Harold J. Grant, Jr.

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ENTOMOLOGICAL NEWS

Vol. LXV DECEMBER, 1954 No. 10

Ecological Notes on Three Species of Solitary Bees

By Frank P. Sivik, North Carolina State College, Raleigh

Studies on the ecology and life history of solitary bees have become important because of the vital role of these bees in the pollination of many plants (Linsley *et al.*, 1952). Such studies, furthermore, may contribute to our understanding of the phylogeny of the group (Michener, 1953). It is the purpose of this paper to record notes on three vernal species, all of which were originally described and named by Mitchell (1936, 1937 and 1951). Both *Andrena macra* and *Megachile rubi* visit flowers of *Rubus* sp., and the latter also visits *Cuscuta* and *Senecio. Megachile oenotherae* usually visits *Oenothera* sp. but has been found on *Ceanothus* sp. and *Pentstemon* sp.

No mating of any of these three was ever seen to occur at the nesting site during the writer's daily visits.

During rainy weather *A. macra* and *M. rubi* remained in their burrows.

Andrena macra. The adult males and females were described from specimens collected for a period of 19 years, the first being in 1935. As far as the writer knows this bee is found only in North Carolina about five miles outside of East Raleigh. The nesting site, exposed mostly to the west, is near a railroad bank and about two yards from a small pond. This bee appears to nest gregariously, and apparently the species requires a hard-packed soil in an area where water is available throughout the nesting season. *A. macra* makes its appearance almost simultaneously with the first flowers of *Rubus* sp.

The first day of flight for this bee was on April 14, 1954, with the males coming out first. They were prevalent for six days and on the seventh and final day of their flight just a few were flying. The males preceded the females by only one day and their parasites, *Nomada* sp., by six. Six days after the males emerged, some of the females were noted entering the burrows, head first, laden with pollen. The parasites were in flight, hovering over the site, for 54 days. Neither the parasites nor the host remained outside of the burrow during the night.

The burrows were not spaced equally near each other; they appeared to be very close in some instances but not in others. They averaged 5 mm. in diameter and penetrated the clay soil as a smooth circular hole. There were many "push-ups" near the burrows but no attempt was made to measure them because of the existing terrain, which was sloping in some places.

Square yard counts of burrow entrance holes were made, using a measured square yard string. Fifty such counts were made with a total of 228 burrow holes. After digging 50 of these holes (a straw was used to indicate direction of the burrow and a post-hole digger and trowel were used for digging), the writer noted that some of the burrows were not finished and if finished (?) were not occupied. The depth of the burrows ranged from three inches to one which was three feet, the average being 18 inches. The burrows went straight down. No eggs or any of the immature stages were located.

The female cleans and excavates the tunnels. Two were observed bringing up soil particles; this process was checked for 1½ hours. It took an average of 2½ minutes for the bees to go down and come up with a load. They carried the soil particles under the abdomen with the hind pair of legs, while the front and mid pair furnished locomotion. As the bees backed out of the nest to the opening, the soil particles were pushed up out of the hole by means of the hind legs with the ventral surface of the abdomen serving as a guide. Usually they gave a good, final push with the tip of the abdomen, and the soil particles were out on the ground level. When this was accomplished the bee waited a second and then hurriedly continued down the cavity. Once a female bee was observed removing a pine needle, about two inches long, from its burrow and this was done in the same manner mentioned above.

Two females, in separate burrows, were noted with their heads just slightly out. With urging the bees flew off. These bees were in cell-like burrows which were about the same depth as the length of the entire body of the bee. The inside surface of the burrow was very smooth and no "push-ups" were nearby.

The type soil at the *A. macra* nesting site was worsham loam. The chemical analysis is as follows: a pH of 5.5, very low in calcium, phosphorous and potassium and contains 0.4 per cent of organic matter.

This nesting site was under observation for 19 years—how long it existed prior to this time is unknown. Unfortunately, the bee population is greatly decreasing which may be due to a weed-killer used by the railroad or by many other factors, such as predators; for example, dragon-fly adults or even birds which are very numerous in the area.

Megachile (*Xeromegachile*) *rubi.* A few individuals were found nesting in sandy loam, on and along an almost unused, unpaved road, about eight miles east of Raleigh, along the Neuse River. On April 29, 1954, both males and females were flying; how long they were out prior to this date is unknown. This species was first collected in 1922 and in North Carolina is found at Raleigh and at Harker's Island near Beaufort. Two females were observed excavating nests. They removed the soil particles with their hind legs, placing the soil outside of the nest with a fast, quick, hard push, aided by the tip of the abdomen, which then patted the soil into place. The eight nests investigated showed no particular exposure, i.e., facing either north, south, east or west. All of the nests, in about a 45° slope, averaged 1½ inches down from the ground level and were horizontal, 3½ inches. Two of the burrows had three cells, three had two and three had only one cell; all were arranged end to end. Both the cell caps and cell walls were made from leaves of the sweet birch, *Betula lenta* L., which was in a thick growth near the site. The cell walls were roughly rectangular and appeared to be cemented together. Each cell was about ⅝ inch long and ¼ inch in diameter, with about 8–10 pieces to the cell wall, and with about 4–5 to the cell caps. The insect egg was placed on its end, off center, on top of the pollen mass. The larval stage was about 11 days. The full-grown larva did not completely fill the cell as in each there was about ⅛th of the pollen remaining in the bottom of the cell. It took one day for the pre-pupa to spin the cocoon. The type soil at this site was cecil sandy loam. The chemical analysis is as follows: a pH of 5.6, medium in calcium, very low in phosphorous and potassium and contains 0.4 per cent of organic matter. No parasites were noted at this nesting area.

Megachile (*Megachiloides*) *oenotherae.* The first *M. oenotherae* was collected in 1922. According to Mitchell (1936), its range is from New Jersey, along the coast to Texas and Oklahoma. Two males were observed to spend the night inside the blossoms of *Oenothera fructicosa* L. A female was observed making its nest in one of the *Andrena macra* burrows, using *Oenothera* petals for the cell caps and what seemed to be the *Oenothera* leaves for the walls. This was the only one observed.

REFERENCES

LINSLEY, E. G., J. W. MACSWAIN and R. F. SMITH. 1952. Ecology 33: 558–567.

MICHENER, C. D. 1944. Bul. Am. Mus. Nat. Hist. 82: 151–326.

——. 1953. Systematic Zool. 2: 112–118.

MITCHELL, T. B. 1936. Trans. Am. Ent. Soc. 62: 117–166.

——. 1937. Trans. Am. Ent. Soc. 62: 323–382.

——. 1951. J. Elisha Mitchell Sci. Soc. 67: 231–248.

RAU, P. 1926. Trans. Acad. Sci. St. Louis 25: 157–266.

Notes and News in Entomology

Under this heading we present from time to time, notes, news, and comments. Contributions from readers are earnestly solicited and will be acknowledged when used.

Von Frisch on Orientation in Bees. In a recent paper[1] entitled: "Competition between the heavens and the earth in the orientation of bees," Professor KARL VON FRISCH and MARTIN

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[1] VON FRISCH, K. UND M. LINDAUER, 1954. Himmel und Erde in Konkurrenz bei der Orientierung der Bienen. Die Naturwissenschaften 41: 245–253.

LINDAUER have added greatly to our knowledge of the means that bees use in finding their way between their feeding place and their hive. Earlier papers by von Frisch,[2] and by his student Lindauer [3] have been reviewed previously in the pages of ENTOMOLOGICAL NEWS.

In this paper we learn of the use that bees make of landmarks (features of the landscape) as well as of their use of the sky-compass (position of the sun, and the direction of vibration of the polarized light from the blue sky that is dependent on the sun's position) in directing their flights.

If one trains bees to a feeding station in a certain direction from the hive, and if these bees are then moved overnight to a new and distant locality, they will, in the morning, immediately set out to search for food in the same direction and at the same distance as on the previous afternoon.

In one experiment, for example, bees were trained to anise-flavored sugar solution, 600 feet west of the hive. The locality was a narrow mountain gorge and the bees had to fly through trees and across an arm of a lake to reach the food. The hive was then moved overnight to a locality of broad meadows where a food station had been set up 600 feet west of the hive, with similar stations to the north, south and east. In the morning, on their first flight, 27 of the 29 trained and numbered bees were observed again. Of these, 20 appeared at the west station, 5 at the south, and 1 at the east station. Each bee was captured when it made its first appearance at a station, so that there was no dance communication with others. Of 12 experiments of this sort, 2 were negative, and these were on days with an overcast sky. It seems, accordingly, that in addition to sighting the sun (we already know that for bees' eyes the sun is visible through the clouds), the presence of blue sky with its polarized light is necessary. This narrows down the question to this: Is the sight of the blue sky alone sufficient, without a direct view of the sun?

One afternoon, a hive was set up on a narrow strip of lake shore, along a narrow gauge track, at the base of a mountain.

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[2] SCHMIEDER, R. G., 1947. Ent. News 58: 152–154.

[3] SCHMIEDER, R. G., 1952, 1953. Ent. News 63: 100–102; 64: 262–265.

Here the hive was in the shadow of the mountain, and on their flights back and forth to the food station, in a SE direction, the bees were never out of the shadow—they never had a direct view of the sun, only of the blue sky. After one afternoon's training, the hive was moved overnight to a region of broad, open meadows. The next morning, the hive was opened and the flights of the bees to the four food stations that had been set up (in the NE, SE, NW, and SW) were observed. In overwhelming numbers the bees flew immediately to the SE, the training direction. This shows that a view of the blue sky suffices for orientation; and it also shows that although trained only during the late afternoon of one day, they were able to locate this same direction the next morning, even in a totally different landscape. Thus the bees must be able to calculate the right direction in relation to the sun (or to the polarization pattern of the sky that changes with the sun's position) for other times of the day than that for which they have been trained, and in any landscape. "Knowing then that the sun's position and the direction of vibration of the polarized light of the sky are linked together in this manner, one may imagine that the dome of the heavens must constitute a compass of convincing intensity to the comprehensive gaze of the bee's facetted eyes."

The next question taken up was: Are striking landmarks or is the sky-compass of greater significance in orientation? In a field partly enclosed by woods, a hive was set up close to a woods-field boundary, that ran straight north-south. The food station was placed ca. 600 feet south of the hive, so that the flights from hive to food were close and parallel to the woods. Moved overnight to a similar field and placed close to a woods boundary running east-west, the bees were found to disregard the original flight direction (which now would have taken them out into the open field, at right angles to the woods) and flew from the hive along the edge of the woods (which meant flying west, instead of south as in the first field).

On another afternoon, bees were trained on the shore of a lake, so that their flight closely paralleled the shore. They were then removed overnight to another lake with a shore line running at right angles to that of the previous afternoon. Both lakes were in flat, open country, surrounded by meadows. In still another experiment, the bees and the food station were placed 600 feet apart and 3 feet from the edge of a straight stretch of country road. The next morning, the bees were tested beside a similar road but running at right angles to the first. In all these experiments it was the striking landmark that determined the orientation; bees disregarded the compass direction and followed the woods line, lake shore, or highway. Only when the training has been carried out at some distance from such a landmark does the sky-compass become the means of orientation. Apparently it is the *continuity* of the line of the lake shore, woods, etc., that so impresses the bee.

Bees were not influenced by a large tree close to their line of flight, or even by a grove of trees. When moved to a new location with a similar large tree or grove, again standing alone in a flat landscape, the bees nevertheless flew in the correct compass direction.—R. G. SCHMIEDER.

NOTICE

Beginning with the January issue 1955, ENTOMOLOGICAL NEWS will no longer include the "Current Entomological Literature." This section began with the very first issue of the NEWS in January, 1890, and has constituted, over the years, one of the important services that the NEWS has been happy to render its subscribers.

In recent years, the volume of papers published in entomology throughout the world has become so great that the listing of the titles is a function now performed by special bibliographic publications. This makes the work that the NEWS has been doing largely a duplication, the labor and expense of which can no longer find sufficient justification. Although many subscribers have found in the "Literature" an inexpensive and convenient way of keeping abreast of current publication, the amount of space taken up in the journal (over 40% of its text pages during 1954) is far too great for material that is of only temporary value (since all titles appear later in the Zoological Record). It is felt that ENTOMOLOGICAL NEWS can be made a more valuable publication by devoting all its available space to original articles and to news items. Contributors will then find that their shorter scientific papers will appear in print without so long a delay, and, if our readers will cooperate by sending in news of recent advances, of events as well as personals, all will be better informed as to what is going on in the entomological world.

To subscribers who have heretofore depended upon "Current Entomological Literature," we suggest the use of the following:

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Current Entomological Literature

Compiled by VENIA T. PHILLIPS, Librarian

Academy of Natural Sciences of Philadelphia

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania pertaining to entomology, including all arthropods except Crustacea. Coverage will be world-wide as regards major contributions to systematics as well as for all papers on morphology, physiology, embryology, etc. In addition, for species from the Americas and the Pacific (Nearctic, Neotropical and Polynesian regions) all minor contributions to taxonomy, distribution, etc., will also be recorded.

This list gives references of the year 1954 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

GENERAL—Auclair, J. L. & J. B. Maltais—Paper partition chromatography in entomological research. [43] 86: 377–81, ill. **Brooks, A. R.**—The role of systematics in forest and field crop entomology. [Proc. Ent. Soc. Manitoba] 9: 25–30, 1953. **Buckner, C. H.**—The role of small mammals as predators of forest insects. [Proc. Ent. Soc. Manitoba] 9: 13, 1953. **Chapman, J. A.**—Observations on snow insects in western Montana. [43] 86: 357–63, ill. **Davis, J. J.**—Insects of Indiana for 1953. [Proc. Ind. Acad. Sci.] 63: 152–56, 1953. **Fitzwater, W. D., Jr.**—Effects on wildlife other than insects of widespread use of insecticides. [Proc. Ind. Acad. Sci.] 63: 188–90, 1953. **Hayward, K. J.**—An entomologist in Argentina. VII. Agricultural entomologist. [Ent. Rec.] 66: 191–95. **Stephen, W. P.**—Serology—A tool in entomological systematics. [Proc. Ent. Soc. Manitoba] 9: 10–12, 1953. **Williams, E. C., Jr. & R. O. Drummond**—A modified Berlese funnel. [Proc. Ind. Acad. Sci.] 63: 163–64, 1953. **Wilson, M. C.**—The effects of continued widespread use of organic insecticides. [Proc. Ind. Acad. Sci.] 63: 186, 1953. **Young, F. N.**—Effects on the insect balance of nature (of widespread use of insecticides). [Proc. Ind. Acad. Sci.] 63: 186–88, 1953.

BIOGRAPHIES, OBITUARIES—Bromley, Stanley Willard, 1899–1954—Obituary by Charles P. Alexander. [52] 47: 375–76. **Burr, Malcolm, 1878–1954**—Obituary by B. P. Uvarov. [98] 174: 294.

ANATOMY, PHYSIOLOGY, MEDICAL—Ammann, H.—Die postembryonale entwicklung der weiblichen geschlechtsorgane in der raupe von Solenobia triquetrella F. R. (Lep.) mit ergänzenden bemerkungen über die entwicklung des männlichen geschlechtsapparates. [157] 73: 337–94. **Beams, H. W. & others**—Phase-contrast and electron microscope studies on the nebenkern, a mitochondrial body in the spermatids of the grasshopper. [30] 107: 47–56, ill. **Barth, R.**—Arbeitsmethoden der entomologischen anatomie und histologie. [121] 51: 140–86. —Métodos de trabalho na anatomia e histologia entomológica. [121] 51: 95–139, 1953. **Burnett, T.**—Influence of natural temperatures and controlled host densities on ovoposition of an insect parasite. [113] 27: 239–49. **Chang, Peh-I and G. Fraenkel**—Histopathology of vitamin B_T (carnitine) deficiency in larvae of meal worm, Tenebrio molitor. [113] 27: 255–66. **Edwards, G. A. & others**—Electron microscope studies of insect muscle. I. Flight and coxal muscle of Hydrophilus piceus. [52] 47: 343–54, ill. **Ellis, P. E. & G. Hoyle**—A physiological interpretation of the marching hoppers of the African migratory locust. [77] 31: 271–79. **Gray, P. H. H.**—Effects of humidity during growth of Pieris rapae larvae. [85] 8: 88–90. **Green, G. W.**—The functions of the eyes and antennae in the orientation of adults of Neodiprion lecontei (Fitch). [43] 86: 371–76, ill. **Harnisch, O.**—Neue untersuchungen zur atmungsphysiologie der larve von Prodiamesa olivacea Meig. [Biol. Zentralblatt] 73: 305–17. **Hoyle, G.**—Changes in the blood potassium concentration of the African migratory locust during food deprivation, and the effect on neuromuscular activity. [77] 31: 260–70. **Hukushima, S.**—Effect of the temperature, light and other factors of the environment upon activity of the pistol case bearer, Coleophora malivorella Lirey . (Activity fluctuation in insects and environmental condition, XIV.) (Eng. summ.) [109] 10: 11–17, ill. **Inoue, H. & S. Kamano**—Studies on carbohydrate and water contents in egg of the rice stem borer. (Eng. summ.) [109] 10: 18–22, ill. **Jones, J. C.**—A study of mealworm hemocytes with phase contrast microscopy. [52] 47: 308–15, ill. **King, R. C.**—Studies with radiophosphorus in Drosophila. III. [78] 126: 323–36. **Kovačević, Z.**—The importance of the polyhedry for the mass appearance of some insects. [Zashtita Bila] no. 23, 3–20, ill. (English summary only.) **Krause, G. und K.**—Induktion secundärer segmente bei der metameren selbstgliederung der insektenkeimanlage. [100] 41: 235. **Lewis, H. W.**—Studies on a melanoma-producing lethal in Drosophila. [78] 126: 235–76. **Lundblad, O.**—Studier över insektfaunan i Uppsala universitets naturpark vid Vårdsätra. [K. Sven. Veten. Avh. Natur.] no. 8, 67 pp., ill. —**A. Olsson**—Insektfaunan på Hallands Väderö. [K. Sven. Veten. Avh. Natur.] no. 9, 74 pp., ill. **Matthes, E.**—Diapause, bivoltinismus und zweimalige überwinterung bei Fumea crassiorella (Psychidae). [Mem. e Est., Mus. Zool. Univ. Coimbra] no. 220, 16 pp., ill., 1953. **Munson, S. C., G. M. Padilla & M. L. Weissmann**—Insect lipids and insecticidal action. [76] 47: 578–87, ill. **Nemenz, H.**—Über den wasserhaushalt einiger spinnen, mit besonderer berücksichtigung der transpiration. [Öster. Zool. Zeit.] 5: 123–58, ill. **Nickerson, B.**—A possible endocrine mechanism controlling locust pigmentation. [98] 174: 357–58. **Nishio, Y.**—Über die vier spinnmilben an apfelbäumen. (Eng. summ.) [109] 10: 29–35, ill. **Ohnishi, E.**—Tyrosinase activity during puparium formation in Drosophila melanogaster. [Jap. Jour. Zool.] 11: 69–74, ill., 1953. **Ootake, A.**—The fluctuation of aphid population. (Eng. summ.) [109] 10: 23–28, ill. **Park, T.**—Experimental studies of interspecific competition. II. [113] 27: 177–238. **Pistor, K.**—Histologische untersuchungen am nervensystem von Calliphora erythrocephala nach insektizidenwirkung. [100] 41: 236. **Stein, I.**—Veränderungen am histologischen bau der sehzentren von libellenlarven nach blendung. [Öster. Zool. Zeit.] 5: 159–71, ill. **Tsuneki, K.**—On colour vision in two species of ants, with special emphasis on their relative sensitivity to various monochromatic lights. [Jap. Jour. Zool.] 11: 187–221, ill., 1953. **Utida, S.**—"Logistic" growth tendency in the population fluctuation of the rice stem borer, Chilo simplex. (Eng. summ.) [109] 10: 3–10, ill. **Wellington, W. G.**—Atmospheric circulation processes and insect ecology. [43] 86: 312–33, ill. **Wilson, V. J.**—Slow and fast responses in cockroach leg muscle. [77] 31: 280–90.

ARACHNIDA AND MYRIOPODA—Aragão, H. B. & F. da Flavio—Otocentor nitens Neumann, 1897, versus Anocentor columbianus Schulze, 1937 e comentários sôbre a rápida disseminação dêsse Ixodideo no Brasil (Acari: Ixodidae). [121] 51: 499–502, 1953. **Aragão, H. B. & F. da Fonseca**—A propósito da validade de algumas espécies do gênero Amblyomma do continente Americano (Acari: Ixodidae). [121] 51: 485–92, ill., 1953. **Auerbach, S. I.**—A new centipede from Illinois (Chilopoda; Geophilomorpha: Geophilidae). [97] no. 136, 5 pp., ill. **Baerg, W. J.**—Regarding the biology of the common Jamaican scorpion. [52] 47: 272–76. **Beer, R. E.**—A revision of the Tarsonemidae of the Western Hemisphere (order Acarina). [83] 36: 1091–1387, ill. **Beier, M.**—Ein neuer Olpiide (Pseudoscorp.) aus dem Hochlande von Perú. [Senckenbergiana] 34: 325–26, ill. **Birabén, M.**—Nuevo genero de la rara familia Prodiodomidae. [Neotropica] 1: 13–16, ill. **Bücherl, W.**—Escorpiões e escorpionismo no Brasil. Pts. 1–2. [Mem. Inst. Butantan] 25: 53–108, ill., 1953. —Quilopodos, aranhas e escorpiões enviados ao Instituto Butantan Para determinação. [Mem. Inst. Butantan] 25: 109–48, ill. (*). **Crabill, R. E., Jr.**—A conspectus of the northeastern North American species of Geophilus (Chilopoda, Geophilomorpha, Geophilidae). [56] 56: 172–88, ill. (*). **Crome, W.**—Beschreibung, morphologie und lebensweise der Eucta kaestneri sp. n. (Araneae, Tetragn.). [158] 82: 425–52. **Fonseca, F. da & H. B. Aragão**—Descrição da fêmea de Amblyomma multipunctum Neumann 1899 e redescrição do macho (Acari: Ixodídae). [121] 51: 493–98, ill., 1953. **Hoffman, R. L.**—On three poorly-known Neotropical milliped genera (Polydesmida, Eurydesmidae). [56] 56: 215–21, ill. **Hughes, T. E.**—The internal anatomy of the mite

Listrophorus leuckarti (Pagenstecher, 1861). [156] 124: 239–56, ill. **Kraus, O.**—Myriapoden aus Peru, 1. [Senckenbergiana] 34: 311–23, ill. (*). **Lipovsky, L. J.**—Studies of the food habits of postlarval stages of chiggers (Acarina, Trombiculidae). [83] 36: 943–58. —**& R. B. Loomis**—A new chigger mite (genus Euschöngastia) from the central United States. [80] 40: 407–10, ill. **Loomis, R. B.**—A new subgenus and six new species of chigger mites (genus Trombicula) from the central United States. [83] 36: 919–42, ill. **Mitchell, R. D.**—Check list of North American water-mites. [Chicago Nat. Hist. Mus. Fieldiana: Zoology] 35: 29–70. **Nemenz, H.**—(See Anatomy.) **Nishio, Y.**—(See Anatomy.) **Richardson, H. P.**—Predators of mites. [Proc. Ent. Soc. Manitoba] 9: 18–20, 1953. **Wharton, G. W.**—Observations on the feeding of prostigmatid larvae (Trombidiformes) on arthropods. [152] 44: 244–45, ill.

SMALLER ORDERS—**Bayreuther, K.**—Die chromosomen der Flöhe (Aphaniptera). [100] 41: 309. **Carriker, M. A., Jr.**—The Menoponidae of the Cracidae and the genus Odontophorus. (Neotropical Mallophaga Miscellany no. 8.) [Novedades Colombianas] no. 1, 19–31, ill. (*). **Clay, T. & G. H. E. Hopkins**—The early literature on Mallophaga. Pt. 3. [35] 3: 223–66, ill. **Gardner, A. E.**—A key to the larvae of the British Odonata. Introduction and Part 1. [Ent. Gaz.] 5: 157–71, ill. (k). **Holland, G. P.**—The crow flea, Ceratophyllus rossittensis Dampf, in North America (Ceratophyllidae). [43] 86: 334–36, ill. —A new species of Catallagia Rothschild from the Rocky Mountains of Alberta (Siphonaptera: Hystrichopsyllidae: Neopsyllinae). [43] 86: 381–84, ill. **Ide, F. P.**—The nymph of Rhithrogena impersonata (Ephemerida) and a new closely related species from the same locality in southern Ontario. [43] 86: 348–56, ill. **Morlan, H. B.**—Notes on the genus Megarthroglossus (Siphonaptera, Hystrichopsyllidae) in Santa Fe County, New Mexico. [80] 40: 446–48, ill. **Paterson, H. E.**—A new record of the quill-boring habit in Mallophaga. [60] 4th ser. v. 90: 158. **Remington, C. L.**—The supra-generic classification of the order Thysanura (Insecta). [52] 47: 277–86. **Stein, I.**—Odonata. (See Anatomy.) **Tapia, E. A.**—Especie nueva de Dactuliothrips (Thysanoptera). [Rev. Soc. Ent. Argentina] 16: 77–19, ill., 1953.

ORTHOPTERA—**Beam, H. W. & others**—(See Anatomy.) **Cantrall, I. J. & F. N. Young**—Contrasts in the orthopteran faunas of grassland, forest and transitional areas in southern Indiana. [Proc. Ind. Acad. Sci.] 63:

157–62, 1953. **Nickerson, B.**—(See Anatomy.) **Romanow, W.**—Predators of grasshoppers. [Proc. Ent. Soc. Manitoba] 9: 14–18, 1953. **Slifer, E. H.**—A method for calculating the surface area of the body of grasshoppers and locusts (Acrididae). [52] 47: 265–71, ill. —The variation in size and pattern of the heat-sensitive areas in Melanoplus keeleri luridus (Dodge) males (Acrididae). [52] 47: 255–64, ill. **Thomas, J. G.**—The post-embryonic development of the dorsal part of the pterothoracic skeleton and certain muscles of Locusta migratoria migratorioides (Reiche & Fairm.). [156] 124: 229–38, ill.

HEMIPTERA—Ash, C. R.—Tingoidea of Tippecanoe County, Indiana. [Proc. Ind. Acad. Sci.] 63: 185, 1953. **Barth, R.**—Anatomische und histologische studien ueber die unterfamilie Triatominae (Reduviidae)—III Teil: Untersuchungen ueber den stechvorgang bei Triatominae. [121] 51: 69–94, ill., 1953. —Estudos anatômicos e histológicos sôbre a subfamília Triatominae (Reduviidae)—III parte: Pesquisas sôbre o mecanismo da picada dos Triatominae. [121] 51: 11–68, ill., 1953. **Christian, P. J.**—Two new species of Typhlocybine leafhoppers from North America (Cicadellidae). [Trans. Kentucky Acad. Sci.] 15: 26–29, ill. **Drake, C. J. & J. M. Capriles**—Puerto Rican waterstriders. [31] 67: 219–22. **Drake, C. J. & J. C. M. Carvalho**—New waterstriders from Brazil. [31] 67: 223–26, ill. **Drake, C. J. & J. A. Roze**—New Venezuelan Gerridae. [31] 67: 227–30, ill. **Fonseca, J. C. da**—Contribuição para o estudo do Coccus hesperidum L. (Coccoidea). II. Subsídios para o estudo da sua biologia e ecologia. [37] 23: 53–93, ill. **Hussey, R. F.**—Concerning some Neotropical Stenopodinae (Reduviidae). [52] 47: 287–300, ill. (*). —Some new or little-known Miridae from the northeastern United States. [56] 56: 196–202, ill. **Jacobs, M.**—Observations on the two forms of the periodical Cicada (Magicicada septendecim (L.)). [Proc. Ind. Acad. Sci.] 63: 177–79, 1953. **MacGillivray, M. E.**—A new genus and species of Aphidae on Philadelphus sp. [43] 86: 346–48, ill. **Ootake, A.**—(See Anatomy.) **Schuder, D. L.**—Additions to the Coccoidea or scale insects of Indiana. [Proc. Ind. Acad. Sci.] 63: 171–76, ill., 1953. **Wolcott, G. N.**—Dispersion to the tropics of the Spirea aphid. [76] 47: 568–71.

LEPIDOPTERA—Barth, R.—Das abdominale duftorgan des maennchens von Caligo arisbe Hbn. (Brassolidae). [121] 51: 220–26, ill., 1953. —Allgemeine betrachtungen ueber die maennlichen sexualduftorgane der Lepidoptera. [121] 51: 199–202, ill., 1953. —Considerações gerais sôbre os órgãos odoríferos sexuais dos machos dos Lepidópteros. [121] 51: 187–98, ill., 1953. —Estudos sôbre as placas das glândulas de cêra da lagarta de Tolype serralta (Lasiocampidae). [121] 51: 263–71, ill., 1953. —Maennliche duftorgane einiger brasilianischer Syntomidae (= Ctenuchidae). [121] 51: 252–62, ill., 1953. —O órgão odorífero abdominal do macho de Caligo arisbe Hbn. (Brassolidae). [121] 51: 203–19, ill., 1953. —Órgãos odoríferos masculinos de algumas Syntomidae brasileiras (= Ctenuchidae). [121] 51: 227–51, ill., 1953. —Untersuchungen an den wachsdrusenplatten der raupe von Tolype serralta (Lasiocampidae). [121] 51: 272–76, ill., 1953. **Bellinger, P. F.**—Attraction of zebra males by female pupae. [85] 8: 102. **Bennett, W. H.**—The metamorphosis of the pine leaf miner (Exoteleia pinifoliella (Chamb.)) (Gelechiidae). [43] 86: 310–11, ill. **Bourgogne, J.**—Le venin de vipère utilisé comme nourriture par une Tinéide. [138] 59: 74–75. **Bourquin, F.**—Notas sobre la metamorfosis de Hamearis susanae Orfila, 1953 con oruga mirmecófila (Riodin.). [Rev. Soc. Ent. Argentina] 16: 83–87, ill., 1953. **Bretherton, R. F.**—Moth traps and their lamps: an attempt at comparative analysis. [Ent. Gaz.] 5: 145–54. **Brown, F. M.**—Some notes on Boloria in central Colorado (Nymphalidae). [85] 8: 64–66, ill. **Chiarelli de Gahan, A.**—Una especie nueva argentina del género Carpella (Geometridae). [Rev. Soc. Ent. Argentina] 16: 95–98, ill., 1953. **Clench, H. K.**—The identity of Crambidia allegheniensis (Lithosiidae). [85] 8: 93–94. —Nymphalis californica: A new record for Pennsylvania. [85] 8: 94. **Deay, H. O. & J. G. Taylor**—Preliminary report on the relative attractiveness of different heights of light traps to moths. [Proc. Ind. Acad. Sci.] 63: 180–84, ill., 1953. **Diakonoff, A.**—Considerations on the terminology of the genitalia in Lepidoptera. [85] 8: 67–74, ill. **Ferguson, D. C.**—A revision of the genus Hypenodes Doubleday with descriptions of new species (Phalaenidae). [43] 86: 289–98, ill. **Fryxell, T.**—On transporting Lepidoptera safely. [85] 8: 103. **Gillham, N. W. & P. R. Ehrlich**—The naming of subspecies in Lepidoptera. [85] 8: 100. **Gray, P. H. H.**—1952 captures in Quebec. [85] 8: 102. **Guppy, R.**—Some host plant records derived from rearing experiments. [85] 8: 101. **Hessel, S. A.**—A guide to collecting the plant-boring larvae of the genus Papaipema (Noctuidae). [85] 8: 57–63. **Janse, A. J. T.**—The moths of South Africa. 5(4): 301–464, pls. 137–202. **Köhler, P.**—Agrotinae argentinas. Géneros y especies nuevos. [Rev. Soc. Ent. Argentina] 16: 88–94, ill., 1953. **Mather, B.**—Lycaena thoë in Mississippi. [85] 8: 102. **Orfila, R. N.**—Una especie nueva de Hamearis (Riodin.). [Rev. Soc. Ent. Argentina] 16: 80–82, ill., 1953. **Remington, C. L.**—A new name for the Colorado race of Pieris napi. [85] 8: 75. —A new pale male of Colias philodice. [85] 8: 76. **—& P. J. Darlington, Jr.**—Lepidoptera larvae and pupae transferred from Harvard M.C.Z. to Yale University. [85] 8: 104. **Samuelson, G. A.**—Observations on Recurvaria milleri, the lodgepole needleminer (Gelechiidae). [85] 8: 91–93. **Scott, E.**—The dispersal flight of moths. [Ent. Gaz.] 5: 122–24. **Smith, S. G.**—A partial breakdown of temporal and ecological isolation between Choristoneura species (Torticidae). [62] 8: 206–24, ill. **Stallings, D. B. & J. R. Turner**—Notes on Megathymus neumoegeni, with description of a new species (Megathymidae). [85] 8: 77–87, ill. **Stoner, E. A.**—Further notes on the migration and breeding of Nymphalis californica. [85] 8: 103. **Trought, T.**—The life history of Thaumetopoea jordana Staudinger. [Ent. Rec.] 66: 188–91, ill.

DIPTERA—**Albuquerque, D. de O.**—Contribuição ao conhecimento de Scatophagidae neotropicãis, com descrição de uma espécie nova. [Boletim Mus. Nac. nova série] Zoologia no. 121, 6 pp., ill., 1953. **Blanchard, E. E.**—Lopesimyia, un nuevo género de sarcofágido argentino. [Neotropica] 1: 9–12, ill. **Bletchly, J. D.**—The mouth parts of the dance fly, Empis livida L. (Empididae). [156] 146: 317–34, ill. (k). **Duret, J. P.**—Las especies argentinas de Culex (Melanoconion) (Culicidae). [Rev. Soc. Ent. Argentina] 16: 67–76, ill., 1953. **Frick, K. E.**—Three North American Phytomyza species closely related to P. nigritella Zetterstedt (Agromyzidae). [52] 47: 367–74, ill. **Galindo, P. & F. S. Blanton**—Nine new species of Neotropical Culex, eight from Panama and one from Honduras (Culicidae). [52] 47: 231–47, ill. **Huckett, H. C.**—A review of the North American species belonging to the genus Hydrotaea Robineau-Desvoidy (Muscidae). [52] 47: 316–42 (*k). **Komp, W. H. W.**—Haemagogus lucifer, H., D. & K., 1912, a synonym of Haemagogus regalis D. & K., 1906 (Culicidae). [56] 56: 193–95, ill. **Morris, R. F.**—Note on the blow fly Phaenicia sericata (Mg.) (Calliphoridae) in Newfoundland. [43] 86: 356. **Ohnishi, E.**—(See Anatomy.)

Rees, D. M. & G. C. Collett—The biology of Aedes niphadopsis Dyar and Knab (Culicidae). [56] 56: 207–14, ill. **Stone, A.**—The genus Bolbodimyia Bigot (Tabanidae). [52] 47: 248–54 (*k).

COLEOPTERA—Bebić, N.—Contribution to the knowledge of the biology of Tropinota hirto Poda. [Zashtita Bila] no. 23, 63–71. (English summary only.) **Bechyné, J.**—Chrysomeloidea aus El Salvador (Phytophaga). [Senckenbergiana] 34: 293–96, ill. **Blake, D. H.**—Five new species of chrysomelid beetles. [152] 44: 246–50, ill. **Bohart, R. M.**—Identification of first stage larvae of California Aedes (Culicidae). [52] 47: 355–66, ill. **Böving, A. G.**—Mature larvae of the beetle-family Anobiidae. [K. Dan. Viden. Selsk. Biol. Medd.] 22: no. 2, 1–298, ill. **Bryan, J. H. D.**—Cytological and cytochemical studies of oogenesis of Popilius disjunctus Illiger (Polyphaga). [30] 107: 64–79, ill. **Edwards, G. A. & others**—(See Anatomy.) **Franz, E.**—Cerambycidae aus El Salvador. [Senckenbergiana] 34: 213–29, ill. (*). **Heqvist, K.-J.**—Eine neue Hylocurus-art aus Guatemala (Ipidae). [Ent. Tidsk.] 75: 8–9, ill. **Jones, J. C.**—(See Anatomy.) **Lindroth, C. H.**—Carabid beetles from eastern and southern Labrador. [43] 86: 364–70. —Carabid beetles from Nova Scotia. [43] 86: 299–310. **Puisségur, C. & J. Thérond**—Deux cas de brachélytrie chez des Carabes. [59] 10: 34–36, ill. **Tashiro, H. & W. E. Fleming**—A trap for European chafer surveys. [76] 47: 618–23, ill. **Tuttle, D. M.**—Notes on the bionomics of six species of Apion (Curculionidae). [52] 47: 301–07. **Wood, S. L.**—A revision of North American Cryphalini (Scolytidae). [83] 36: 959–1090, ill.

HYMENOPTERA—Cole, A. C.—Studies of New Mexico ants. X. The genus Leptothorax (Formicidae). [147] 29: 240–41. **Kannowski, P. B.**—Notes on the ant Novomessor manni Wheeler and Creighton. [89] no. 556, 6 pp. **Kashef, A.**—Morphologie et anatomie de la larve de Lariophagus distinguendus Först (Pteromalidae). [138] 59: 93–96, ill. **Lejeune, R. T. & V. Hildahl**—A survey of parasites of the larch sawfly (Pristiphora erichsonii (Hartig)) in Manitoba and Saskatchewan. [43] 86: 337–45. **Ogloblin, A.**—Un nuevo subgenero de "Temnosoma" F. Smith (Halictidae). [Neotropica] 1: 5–8, ill. **Salter, K. E. W.**—Studies on Australian Thynnidae. I. A check list of the Australian and Austro-Malayan Thynnidae. [Proc. Linn. Soc. New So. Wales] 78: 276–315, 1953 (pub. 1954). **Tsuneki, K.**—(See Anatomy.)

A Book on German Dragonflies

In 1937 Miss Cynthia Longfield published a book of 220 pages, illustrated with text-figures and 38 plates, on the Dragonflies of the British Isles. A review by the late Prof. Clarence H. Kennedy, in the *Annals of the Entomological Society of America* (31: 180, June, 1938), brought this work to the attention of American students of these insects. In 1949 a second, enlarged edition of Miss Longfield's book appeared with 256 pages; a special feature was the inclusion of 12 colored plates from original drawings, prepared by W. F. Evans for private circulation in 1845, and 4 colored plates by C. A. Hammond. Now comes a comparable publication for German dragonflies: Die Libellen unserer Heimat, by Hans Schiemenz, of the Zoological Museum of the Humboldt University of Berlin, Urania Verlag, Jena, 1953, 154 pages, 30 plates in colors and 31 text-figures. The contents are divided into three parts: A—General part, on dragonflies and their ancestors, structure and functions of the dragonfly's body and the life of dragonflies; B—Special part on the systematics, identification and habits of the German dragonflies; C—Practical part, on the observation, capture and preparation of dragonflies, the rearing of their larvae in aquaria and an identification table for both imagos and larvae. There are a glossary, an (incomplete) bibliography of European Odonata from 1839, and alphabetical subject and author indexes.

Part B occupies more than a third of the book. Here each species is treated under the headings: size and coloring, distribution, biotope, flight period, pairing and oviposition, eggs, larvae, overwintering, developmental period and special mention.

The colored illustrations of the species are aquarelles by Kurt Schuster with, usually, backgrounds of appropriate vegetation or, in one case, the buildings on both sides of a city street through which an Aeschna cyanea is hunting its prey. The colors of the bodies are carefully executed, the wings are merely sketches which suggest the iridescent flutings but give no details of the all-important venation. In this respect they are inferior to the colored plates of Miss Longfield's second edition. There are, indeed, very few (4) figures of the venation throughout the book. Much information on the life, development, habits and general ecology of dragonflies is to be found in this book, some of it drawn from the author's own observations.

German, as well as the scientific, names are given for each species in order to make these insects known to wider circles. "Many people, above all the young, understandably enough, are frightened by the scientific Greek-Latin designations." Dr. E.

Straub has cooperated with the author in the selection of these German names. A few examples are Binsenjungfern for the genus Lestes, Glänzende Binsenjungfer for Lestes dryas, Gemeine Binsenjungfer for Lestes sponsa. The Aeschnidae are die Edellibellen, the genus Aeschna is the Mosaikjungfern, Aeschna grandis die Braune Mosaikjungfer, Aeschna coerulea die Alpen-Mosaikjungfer. Both Enallagma and Agrion (in the Selysian sense) are Azurjungfer, while the species names are based on the shapes of the black markings of abdominal segment 2, thus Becher-Azurjungfer for Enallagma cyathigerum. Incidentally, Calopteryx and Agrion are retained in the Selysian sense. The common names for the same species, in most cases, have not the same meaning in Miss Longfield's and Herr Schiemenz's books.

Herr Schiemenz lists 80 species for Germany, 2 of which are central European but not yet certainly recorded for Germany. Miss Longfield's total for the British Isles is 44.

No indication of price accompanies the copy of Herr Schiemenz's book which we have seen.

PHILIP P. CALVERT

INSECT METAMORPHOSIS; THE DRAGONFLY LARVA, by R. E. Snodgrass, Smithsonian Miscellaneous Collections, Vol. 122, No. 9, April 1, 1954; Vol. 123, No. 2, Sept. 21, 1954.

Readers of the NEWS whose memory goes back to 1927 will recall that in that year the first of Mr. Snodgrass's essays on the structure and functions of insects and of other arthropods was noticed in our pages. From time to time others of his series were reviewed. Now the two most recent have appeared and we are glad to signalize them.

The subject matter of Insect Metamorphosis is treated under 12 chapters headed: 1. Metamorphosis and classification, 2. Hormones and metamorphosis; one chapter each on the orders, 3. Apterygota, 4. Plecoptera, 5. Ephemeroptera, 6. Odonata, 7. Hemiptera and 8. Thysanoptera; the very suggestive ninth chapter is on the Oligoneoptera or typical Endopterygota: Neuroptera to Hymenoptera, 10. Larval heteromorphosis, 11. The pupal transformation; and 12. Muscle attachments and the nature of the pupa.

"True metamorphic characters, as here understood, are adaptive structures, temporarily assumed usually by the young insect for its own purposes, that have no phylogenetic counterpart in the adult evolution, and which are discarded at the transformation to the imago" (page 6). The term nymph is "limited to the young of ametabolous or paurometabolous insects that in all essential respects, except those of immaturity, resemble their parents and have no important characters that obscure their likeness to the adult" (page 7). Larva is defined as "an immature post-embryonic stage that has acquired for its own use adaptive characters that its adult ancestors did not possess, or which are not carried over into its own winged instar" (page 7).

In connection with larval heteromorphosis much attention is given to parasitic larvae both with and without a planidial stage, meaning by the term planidial a stage in which the larva actively moves about "to find its host or to attach itself to a carrier which will transport it to the nest wherein are the host eggs or larvae on which it is destined to feed" (page 62).

"The reason for holometabolism, that is, for metamorphosis that involves the intervention of a pupal stage between the larva and the imago, is not to be found in the external characters of the larva. The young mayfly or the young dragonfly differ externally from their parents more than do the larvae of some endopterygote insects, but yet they transform without a pupal stage" (page 53). "The more different a larva becomes from the adult of its species, the more specialized its musculature must be, and, therefore, it is in such insects as Lepidoptera, Hymenoptera and Diptera that the greatest degree of muscle reconstruction occurs between larva and imago" (page 106). "The essence of holometabolism is the muscle transformation" (page 107).

There are slightly more than 13 pages of references at the end of the paper. Every entomologist, whatever be his special field of study, will find much to interest him in this essay.

The second of these contributions, on the dragonfly larva, emphasizes many features touched on in its predecessor. Special attention is given to the head, feeding apparatus, alimentary canal, thorax and abdomen. Some unusual points of view are expressed in the following quotations from the summary, pages 35–36. "The respiratory chamber of the intestine is probably the colon rather than the rectum. The cercoids are here regarded as true cerci. The caudal gills of zygopterous larvae are lobes of the epiproct and paraprocts. Only the thorax of the larva resembles the corresponding part of the adult; the larval head and abdomen are constructed entirely for purposes of the aquatic larva, the thorax serves equally well for both larva and adult." The final suggestion is made that "The dragonfly larva should be an interesting subject for experimental studies on the role played by hormones in metamorphosis."

Mr. Snodgrass's great ability is that of being able to stand off at a distance and view the relations of insect life which the rest of us, working in the forest, cannot see for the trees.

PHILIP P. CALVERT

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